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Therapeutic Dietetics on Endocrinological Lines with Vitamine C as the Homologue of Adrenin

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In an article published in the NEW YORK MEDICAL JOURNAL AND MEDICAL RECORD for March 21, 1923, I recalled that the identity of vitamine C had so far remained unknown and that this was attributable to the fact that the oxidizing enzymes of animals and plants had not been taken into account by biochemists. The cause of this oversight was accounted for by the fact that physiology, though it had contributed much to our endocrinological knowledge, had failed to identify the functions of the adrenals, the main organs involved in the present connection. It was shown, moreover, that my interpretation of these functions (1903) based on a collective study of all branches of medicine including physiology, had stood the test of time while accounting for experimental and clinical results which no other interpretation could explain.*

The purpose of the present paper is to submit the results of a series of comparative tests—approximately one thousand—calculated to identify those foods in general use which supply vitamine C in a form similar to that used by the human organism. This could only be done by comparing the results of two tests: one affording a positive reaction with any of the many oxidases found in edible plants, the other giving the positive reaction only when the oxidase corresponded with one which, as will be shown, exists in human blood. The influence of cooking was also tested. The practical bearing of these researches will be suggarized under specific headings.

In the above mentioned paper I submitted that the adrenals were the source of vitamine C, and that this substance, as the homologue of adrenin, epinephrin or adrenalin (pharmacological synonyms), was a paramount factor of tissue life, i. e., the agent which, in the red corpuscles, as a component of hemoglobin, furnished oxygen to all tissues. This same substance was then found, by tests presently to be described, in greater or less quantities in certain foods, fruit, vegetables, meats, etc., thus making it possible, through these foods, to increase the efficiency of the blood's hemoglobin as an oxidizing agent. The farreaching meaning of this fact asserts itself, particularly in view of the inability of physiologists so far to explain tissue oxidation, the function involved in the process. Thus, as Professor Halliburton, of London, states in the latest (1921) edition of his *Textbook of Physiology:* "Knowledge of tissue respiration is so scanty that we can say but little about its pathological bearing."

The connection between the adrenals, tissue oxidation and metabolism, which I urged over twenty years ago, is no longer to be doubted, in view of the array of confirmatory data published by investigators since, including the recently observed influence of these organs on basal metabolism. Nor should the effects of foods upon them be overlooked. Recalling, for instance, that McCarrison had found "marked pathological changes in the adrenal glands due to unbalanced diets," W. J. M. Scott (1), in charge of the laboratory of surgical research at Harvard, found that after partial adrenal insufficiency experimental animals were susceptible to dietary factors which produced no symptoms in normal animals. He states, moreover, that "the effect of diet in adrenal insufficiency is an important problem which should be carefully studied."

In the present paper I shall submit only a succinct review of the evidence which led to the conclusion that the vitamine C of foods was the homologue of the adrenal medullary product, including its active principle epinephrin or adrenalin. The personal researches (1903) referred to above had shown that the adrenals secreted a substance which, on traversing the lungs, took up the oxygen of the air and became an oxidizing enzyme which I termed adrenoxidase. This oxidase, or catalase, I found to correspond, in its biochemical properties, with a plant oxidase long known as tyrosinase, the oxidizing en-

*This applies also to the experimental data recorded by Professor Pende, of Messina, Italy, in his article published in the NEW YORK MEDICAL JOURNAL, for October 17, 1923.

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zyme of tyrosin. Being water soluble and closely related to the alpha aminoacid of hydroxylphenylproprionic acid, it justified, in view of its importance in the vital process and its identity as an amine, the term "vit-amin" introduced by Casimir Funk. The connection of this antiscorbutic vitamine with the adrenal medulla was emphasized by the experimental observation of McCarrison (2) in scorbutic guineapigs that there was "a marked diminution in the adrenal content" of the adrenals.

Sustaining the personal conclusion that adrenalin, as adrenoxidase, was the homologue of the food ferment tyrosinase (vitamine C) were the facts that the bronzing of Addison's disease is often associated with the ferment tyrosinase (3); that the hematoidin found broadcast in animals after removal of both adrenals, particularly in rats (4), is likewise connected with it through a product of broken down hemoglobin; that adrenalin is also found in large quantity in the skin glands of toads (5) which structure, as we know, takes part in the respiratory process of batrachians; that tyrosinase is also found in the macerated skin of frogs and toads (6, 7), and that tyrosin has been considered as "the mother substance of the melanins" which, as is well known, cause the bronzing of Addison's disease. That tyrosin and adrenin were similar bodies seemed clear.

Additional confirmation was afforded by the striking concordance between the results of biological tests, as carried on in guineapigs and other animals by the British Medical Research Committee (8) and other observers and those obtained in considerably over a thousand personal observations (all repeated and amplified for the present paper) based on two color tests devised for the purpose. One of the latter repeats in foods containing vitamine C, the identical function adrenin carries on in the body or in the laboratory: it endows the homologue of the hemoglobin —the tyrosin of plants—with the power to take up oxygen and becomes red, as venous blood does when in the laboratory it is treated with adrenalin (9, 10, 11) under appropriate conditions of osmosis and temperature.

VITAMINE C TEST.

This test is carried out as follows: The food is crushed, or rasped, and finely broken up and its fluid carefully mixed with it, or very little water added if dry. A few drops of the 1-1,000 adrenalin chloride solution is then poured upon it and mixed in; then a few drops of a solution composed of one part of the three per cent. hydrogen peroxide solution to nine parts of pure water are also poured on. When mixed in a test tube the two solutions cause no change of color; it is only when a tissue or fluid, animal or vegetable, contains the oxidizable body that the reaction occurs. The strength of the solution should not be modified as enzymes are very sensitive to oxidizing substances. This test, which appears to be specific as a counterpart of the physiological respiratory process in animals and plants, I have termed the "adrenin-H_2O_2 test." The old maxim that "one cannot draw blood from a turnip" seems compromised in this connection, for a fresh juicy turnip will, under this test, appear in less than one hour literally "bloody," the red magma turning brown by the next day, thus indicating the biochemical connection with the Addisonian bronzing.

A nonspecific color test which I have termed the "guaiac-H_2O_2 test," is very serviceable as an adjunct. It differs only from the former in that tincture of guaiac is used instead of the adrenalin solution. The technic is the same. When tincture of guaiac is applied, as shown by Planche in 1810, to many organic tissues and fluids, it causes them to assume an amethyst blue or bluish green color. Their oxidases (there are many kinds) merely oxidize the guaiac. This may be repeated in the test tube by mixing some of the tincture with the one in ten hydrogen peroxide solution. A curious feature, however, is that when both are applied, as used in the test tube, to tissues, these respond differently. Thus mutton will give ++++ the highest, and pork but + the poorest, vitamine C reaction. Cooking also modifies its effect; thus, spinach gives +++ when raw and nothing when boiled. Even the different parts of the same food used may respond differently. Thus chicken dark meat gave +++ and the white meat O. While it is probable here that the process involved is one of reduction of the H_2O_2 added by the food tissues, the fact remains that it presents the important characteristic of corresponding closely in its results with both the biological and adrenin tests. Thus, all three, the biological, adrenalin-H_2O_2 and guaiac-H_2O_2 give the potato ++. The guaiac-H_2O_2 test is particularly serviceable where, as in red meats, strawberries, beets, etc., the juices are red; it may also replace or serve as control for the adrenin test as regards the actual presence of oxidases.

The food values in vitamine C, as determined by the two color tests given in the following charts, were obtained *before* comparison with the results recorded by the British Committee and other observers were consulted.

In practically every instance, the estimated value in + signs was established by two persons besides myself to avoid any misinterpretation of the shade observed. The results are tabulated on page 3.

Vegetables.—In these, the biological and two color tests for vitamine C corresponded in practically every instance. The only two exceptions were due to various causes. In the carrot, the fact that only the juice or dried carrots were used in the biological tests accounts for the low rating. As to onions, guineapigs in my experience invariably refused the round onion. It is probable that in the biological tests recorded, the animals consumed very sparingly of them. In accord with Hess's biological tests the tomato proved, under color tests, very active, as shown in the chart.

As to cooking, the boiling point was found to destroy the reactivity of vegetables soft in texture, vitamine C being water soluble, while tyrosin is destroyed when heated at 67° C. or above. Cooking below this temperature, i. e., at 65° C., reduced their reactive value of the guaiac-H_2O_2 test about twenty-five per cent., while the adrenin-H_2O_2 retained its full value. The vegetables which stood cooking best were those dense in texture, such as the carrot, turnip, etc., and those protected by a covering, such as peas and beans.

Fruit.—Both color tests agreed as regards the food value of fruit as carriers of vitamine C. The biological and color tests agreed in the case of Florida

FOOD VALUES IN VITAMINE C AS DETERMINED BY THE TWO COLOR TEST.

	Fresh			After boiling	
Vegetables	*Biological Test*	*Guaiac H_2O_2 Test*	*Adrenin H_2O_2 Test*	*Biological Test*	*Guaiac H_2O_2 Test*
Cabbage	++++	++++	++++	++	Fresh O
Cauliflower	++	++++	++++	Untested	Untested
Carrot	Dried +	++++	++++	++	Fresh ++
Tomato	++++	++++	++++		" O
Spinach	+++	+++	+++	Untested	" O
Turnip (white)	Juice +++	++++	++++	++	" +
Sweet potato	Untested	++++	++++	Untested	" +++
Eggplant	"	++++	++++	"	Untested
Lima beans	"	++++	++++	"	Canned O
Green peas	+++	+++	+++	"	Fresh ++
					Canned O
Beets	+++	+++	+++	"	Fresh O
Corn, grain	O	+++	+++	"	Canned O
Wax beans	Untested	+++	++	"	Fresh O
String beans	+++	+++	++	"	Canned O
					Fresh ++
				Cooked ++	Boiled O
Potato	++	++	++	Steamed +	Baked O
					Fried O
Onions (scallions)	+	+++	++	Untested	Untested
Squash	Untested	++	+++	"	Fresh O
Asparagus	"	+++	++	"	" O

	Fresh				
Meats	*Biological Test*	*Guaiac H_2O_2 Test*	*After Boiling*	*After Broiling*	*After Roasting*
Mutton	+	++++	+ plus	++++	
Mutton juice	+	++++	+ plus	++++	
Lamb	+	++	++++	++++	++++
Beef	+	+++		++++	Rare ++++
					Pot-roast ++++
Smoked beef tongue			++++		
Chicken, dark meat	+	+++	+ plus	+ plus	+++
Chicken, white meat	+	O	O	O	O
Veal	+	++	O	O	++++
Pork	+	+	+	+	+
Smoked ham			++++		

Soya Beans	*Biological Test*	*Guaiac H_2O_2 Test*	*Adrenin H_2O_2 Test*	*Boiling*	*Heated at 65°C. 10 m.*
Wilson, black		++++	+++	O	++++
Manchu, Mongol, and Hong Kong	O	+++	++	O	++++
Haberlandi	O	++++	+	O	++++
Early black	O	++++	+	O	++++
Ohio and medium yellow	O	+++	O	O	+++

Fruit	*Biological Test*		*All fresh unless specified* Guaiac H_2O_2 Test	Adrenin H_2O_2 Test
Oranges	++++	(Florida)	++++	++++
Lemons	++++	(Mediterranean)	++++	++++
"	Untested	(California)	++++	++++
Limes	"	(Costa Rica)	++++	++++
Pears	++		+++	+++
Peaches	+++		+++	+++
Cantaloup melon	Untested		+++	+++
Honeydew melon	"		+++	+++
Apples and bananas	+		++	++
Plums	++		++	++
Cherries	Untested		++	++
Prunes, dried	"		+	+
Figs, dried	"		+	+

Bread, Cereals and Nuts	*Biological Test*	*Guaiac H_2O_2 Test*	*Adrenin H_2O_2 Test*
Wheat bread	O	O	O
Wheat saltine crackers	Untested	++	+ weak
Wheat soda crackers	"	O	O
Bran bread	"	++	+
Bran crackers	"	+	+
Corn bread (contains milk)	"	++++	+
Cornmeal mush	"	O	O
Corn flakes	"	O	O
Oatmeal	O	O	O
Rice, polished	O	O	O
Hazelnut (filbert)	Untested	++++	O
Pecan nuts	"	++++	+ weak
Almonds	"	+++	+ weak
Walnuts	"	++	O

Dairy Products	*Biological Test*	*Guaiac H_2O_2 Test*	*Adrenin H_2O_2 Test*	*After boiling*
Milk, whole	++	++++	+	O
" skimmed	+	+++	+++	O
older at 30°F.	Untested	+++	+++	
" powder	+	+ minus	+ minus	
" evaporated	Untested	O	O	
" condensed	O	O	O	O
Buttermilk	Untested	++	+ minus	
Cream	"	+	+ minus	
Ice cream: ½ milk	"	++++	+	
Cheese, skimmed milk	+	+	O	O
Eggs	O	O	O	Boiled O Fried O Poached O
Butter: unsalted	O	++	O	

Molluscs and Fish	*Biological Test*	*Fresh Guaiac H_2O_2 Test*	*Fresh Adrenin H_2O_2 Test*	*After Boiling*
Oysters and clams	Untested	++++	++++	O
Lobster	"	O	O	O
Scallops	"	+ weak	+ weak	O
Smelts, perch and halibut	"	++	++	O
Butterfish	"	+	+	O
Cod	"	+ weak	+ weak	O

Salads, etc.	*Biological Test*	*Guaiac H_2O_2 Test*	*Adrenin H_2O_2 Test*
Lettuce	++++	++++	++++
Celery	Untested	++++	++++
Romaine, endive, parsley and cucumber	"	+++	+++

oranges, while California lemons corresponded with the Mediterranean lemons found alone by Alice H. Smith to possess, in Europe, antiscorbutic properties. The limes—Costa Rica limes—were also found to give a positive reaction, unlike those tested biologically in Europe.

Dairy products.—Whole milk showed a lower reactive power than skimmed owing to its cream; this applies also to icecream. But the difference is shown only by the adrenin test, owing to its specificity. Buttermilk should, like skimmed milk, give a high reaction, but churning accounts for this discrepancy,

exposure to air oxidation, as shown by Hess and others, impairing greatly the efficiency of milk, even during pasteurization.

Salads.—The only food of this class tested biologically was lettuce. But all those tested by the color tests also gave high reactions, thus illustrating their value as sources of vitamine C.

Bread, cereals and nuts.—The comparative color tests were rarely concordant, to the detriment of bread and cereals. But few biological tests seemed to have been made in this series, but the "staff of life," bread, showed negatively in all tests, doubtless due to the action of heat. This was also a result of the destructive influence of prolonged baking. Suggestive in this connection is the fact that of many wheat crackers tested, only one gave a positive reaction, the saltine. Inquiry elicited the fact that they were exposed but a very short time to a very high temperature. Again, cornbread gave a reaction above the normal one for corn, but it was found to contain milk. Cornmeal mush, however, gave nothing; it had been boiled. Nuts gave a poor adrenin reaction but a rich guaiac reaction.

Meats.—In these, the biological and color tests disagreed, but when we realize that the meats tested biologically (which were unspecified and termed lean meat) were fed to herbiverous animals, the biological tests seem faulty. The results have, in fact, surprised some observers, owing to the high exothermic reaction of muscular tissue. Because of the red color of meat fluids, the adrenalin test was deemed liable to mislead and not used in the tests; adrenoxidase being their normal enzyme anyway, the guaiac H_2O_2 reaction was deemed sufficient.

Some interesting facts developed with regard to cooking. Boiling reduced mutton and dark chicken meat seventy-five per cent., but raised lamb fifty per cent., as did also broiling and roasting. Broiling and roasting also improved beef twenty-five per cent., and veal fifty per cent. Pork gave the lowest reaction, but ham and beef tongue—both smoked and salted meats—surprised us with a ++++ even after boiling. This affords an important hint as regards meat preservation and actual improvement in vitamine value, for which no clear explanation can as yet be vouchsafed.

Molluscs and fish.—These showed considerable reactive activity and perfect correspondence as regards color tests, no biological tests having apparently been used. All reactions, however, were annulled by boiling.

Soya beans.—These afforded surprise, as had meats, for they also had been found negative as a class in biological tests, owing probably to the large proportion of oil they contain. Both color tests not only indicated that they are rich in oxidizing enzyme but also that five varieties contain tyrosin, as shown by the adrenin-H_2O_2 test. While boiling annulled these virtues, they were not impaired by heating below 67° C.

Chlorophyll.—Many plants, including grasses other than those used as food also gave positive results, thus suggesting that they might be used as sources of vitamine C in the absence of citrus fruit and green vegetables in the dietetic treatment of scurvy, anoxemias and allied conditions. Prof. Bürgi, (12) of Berne, has urged the therapeutic value of chlorophyll, so widely distributed in plant life. He gives as example spinach, which contains chlorophyll in large quantities and which, we have seen, gives a strong positive adrenin-H_2O_2 reaction, as a food for the elaboration of hemoglobin. Even here a direct link with the adrenin asserts itself. J. F. Fulton, Jr. (13), in a study of blood chlorophylls, states moreover that "recent investigations have shown that hemoglobin and chlorophyll are similar chemically," and recalls the investigations of Gortner on insect melanins—to which we have seen the bronzing of Addison's disease is due—to the effect that "they are sometimes formed from the chlorophyllous substances (oxidizable chromogens) acted upon by the plant ferment tyrosinase"—the homologue, as I have shown, of adrenoxidase the oxidizable substance and chromogen of which is adrenin, the isomer of vitamine C.

CLINICAL APPLICATION.

The Anoxemias.—The identification of vitamine C by differential tests enables us to guide intelligently the use of foods which influence tissue oxidation and control it where needed. It seems to me to inaugurate, in this particular phase of cellular chemistry, a system of dietetic therapeutics on scientific lines. Its field is unlimited, since all tissues, including the blood, are the seat of oxidation processes in which perfect equipoise in this respect is a *sine qua non* of functional efficiency. Again, while increased oxidation is beneficial in certain disorders, it is harmful in others. Defensive efficiency, for example, is closely associated with adequate oxidation, as illustrated by fever, while hyperpyrexia, with its possible consequences, hemolysis and autolysis, typifies the morbid effects of excessive oxidation. Judicious dietetics afford a potent aid to rational medication in these circumstances, vitamine C foods, selected and adjusted to the needs of the moment, being capable often of deciding the issue in a threatening case.

Of course, vitamine C represents but one of the series of three sufficiently studied so far to warrant their general recognition as separate agents of this class, the other two being the fat soluble or antirhachitic vitamine A and the water soluble antineuritic or antiberiberi vitamine B. The relative importance of vitamine C may be surmised, however, when, as the intermediary upon which the body depends for its oxygen, it is rendered unable, by toxic asphyxia, strangulation, etc., to take up oxygen from the air in the pulmonary alveoli. Death ensues within a short time. Again, as the antiscorbutic factor, the water soluble vitamine C protects the body against scorbutus and infantile scorbutus or Barlow's disease. Identified as adrenin, i. e., as the oxidizing agent of the adrenals, the production of this disease becomes clear: scorbutus in the adult or child is a manifestation of advanced oxygen deprivation, i. e., anoxemia, plus a secondary infection due to the resulting loss of defensive efficiency. If the symptomatology of scorbutus is recalled with this fact in mind the primary cause of the gradual tissue death will become plain, i. e., cellular asphyxiation.

True, advanced scorbutus as suggested by the term scurvy is seldom seen in everyday practice. Milder forms of anoxemia are, however, observed daily in our work in all conditions in which the blood cells are more or less impaired, the anemias for instance,

pallor both in children and adults being often the index of deficient ability of the red corpuscles to take up oxygen from the air in the lungs. The heart and muscular layer of all bloodvessels being insufficiently oxygenized from the same cause, become dilated or relaxed. The pallor may then become marked, as often observed in the inadequately fed children of the slums. The vascular dilatation may be such, in starvation, as often observed during the world war, as to lead to edema, children appearing fat though pale when in reality they were only waterlogged.

The list of diseases in which anoxemia is a prominent pathological factor is a long one; a few only can be mentioned within the precincts of this article. It includes several ubiquitous disorders which are virtually never ascribed to such a cause. Constipation, for instance, is often due to atony of the intestinal muscularis through the same cause which induces pallor in ill fed children and edema in the starved. The participation of oxidation in the process is soon shown by the use of intramuscular injections of epinephrin even in the edemas or ascites of hepatic scirrhosis. Even after the removal of gallons of fluid, the ascites will often not recur. Gastroptosis and enteroptosis are not infrequently associated with anoxemia and the beneficial use of strychnine—an adrenal stimulant as I showed in 1903 and 1907 (14), a fact confirmed by Stewart and Rogoff (15) in 1919—attests to the adrenal rôle of adequate oxidation in the process. The gastric atony leading to persistent vomiting following sometimes severe surgical operations, parturition, and late in various severe infections, typhoid fever for example, and due to adrenal failure, likewise entail relaxation of the gastric muscularis, intense myasthenia, and threatening heart arrest in diastole, all due to anoxemia in which failure of the adrenals plays a leading role. Bronchial asthma is also in part (for the deficiency of oxygen is, of course, but one of the prominent factors of all morbid processes) due to anoxemia; hence the immediate relief afforded by adrenin injections. Neuralgia has been described as a "nerve crying for blood," but it is sufficient oxygen which is lacking to carry on efficiently its local metabolic processes and prevent the local accumulation of toxic wastes.

Defensive efficiency during disease.—Much valuable work is now being done to place on a solid foundation the principles of immunity as applied to the prevention of acute infections. Practically no effort is made, however, to sustain or enhance during disease, the defensive efficiency upon which the preservation of life depends. Year in and year out during the forty-five years of my clinical experience have textbooks of practice recommended therapeutic measures addressed to symptoms alone, with "specifics" in a very limited number of disorders, to prove the rule that in practically every instance the course of the disease *per se* is left to itself. The diet is still a sort of perfunctory affair in which no attempt is made to compensate for the materials consumed during the greatly increased metabolic activity which the defensive process entails, as indicated by the elevated temperature, the greater output of carbon dioxide, the correspondingly augmented intake of oxygen, etc. Vitamine C foods become almost sheet anchors in this particular phase of the defensive functions. They serve to replace as fast as used, the adrenin factor upon which the supply of oxygen depends, thus insuring all cells and fluids their defensive integrity as far as oxygenation is concerned. Moreover, with very few exceptions, eggs, for example, the presence of vitamine C betokens the presence of vitamines A and B, thus affording in all foods shown by the biological and color tests to contain C in the foregoing tables, the three essential vitamines for any given case.

An essential feature brought out by the cooking tests, however, is the destructive effect of boiling upon the tyrosin of practically all foods. But most of those used for the sick need not be boiled. The integrity of tyrosin is preserved—thus insuring the efficiency of the vitamine C when the cooking is kept below 67° C. Milk need never be heated beyond this point. Whole milk, we have seen, gives a lower adrenin value than skimmed milk; this is because it is relieved of much of its cream, the vitamine C being left in the remaining fluid. If well borne, however, unskimmed milk which is rich in the antirachitic vitamine A is to be preferred. In rachitic children it is particularly useful, adding lime water to provide calcium. If, as in some institutions, skimmed milk is alone available, butter and egg yolk may serve to contribute, the former A and the latter A and B vitamines. Orange pulp and juice, so rich in C, also contains B vitamine though in smaller relative quantity. Certain meats show enhanced vitamine C values, we have seen, when broiled. Such meats afford food rich in vitamines when finely hashed, if such can be done; if not, its expressed juice may be used advantageously as it is, or the juice may be used to make soups. Vegetable purées may be employed to advantage in this connection, for even if the vegetables have to be boiled and their vitamine C destroyed, their alkaline salts are as important to the patient's welfare as the vitamines themselves. These few hints will suffice to illustrate a line of thought upon which a whole volume could be written when the active principles of A and B and McCollum's very promising vitamine D are also known.

It should be borne in mind in this connection that many articles used as food contain no vitamines as far as the biological and color tests available make it possible to discover. We have seen that several, such as eggs, polished rice, lobster, for instance, give no C reaction even when tested raw, but others, such as lard, oils, even olive oil, cocoa butter, margarine, egg substitutes prepared from cereals, custard powders, etc., are devoid of the three vitamines. Wheat bread and crackers, due to their exposure to baking heat, also belong to this category. That all such should only be used as adjuncts, in the sense that some may be used for the alkaline salts they may contain, is self evident.

Calories.—The question of calories or heat units as evidence of the relative values of foods is intimately bound up with the vitamine problem. The calory doctrine, however, is steadily losing ground. As recently (1923) stated by an authority on dietetics, C. B. Farr (16): "Of late the caloric method of expressing food vaules has somewhat fallen into disrepute. This is partly a reaction from the exaggerated emphasis formerly given to the method,

to the exclusion of older ideas in reference to the proper balance of the principal foodstuffs. It was only the discovery of the vital differences in various proteins, the essential character of minute amounts of accessory food substances and the full significance of mineral salts that recently swung the pendulum in the opposite direction."

Another source of weakness in the present connection is that the calory doctrine fails to take into account food factors which perpetuate the well being of the body. Thus a food apparently quite adequate in calories may in the long run prove harmful owing to its deficiency in vitamines. Clinicians are often told by advocates of the calory method, for instance, that the greater quota of nourishment in a meal lies in the bread and butter eaten. But we have seen that wheat bread, as shown by both biological and color tests, contains no vitamine C, while butter supplies only vitamine B. It would seem, therefore, that the balance of the meal is needed to supply vitamines A and C. It is probable that the calory doctrine will come into its own when all factors concerned with thermogenesis will be better understood. In the present stage of knowledge, however, it is a dangerous method for dietetic treatment of the sick, one capable in fact of favoring a fatal issue unless the need of vitamines (and mineral salts) capable of sustaining the vital and defensive functions of the body is also recognized and met.

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2043 WALNUT STREET.

Pluriglandular Therapy

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The physician who prescribes pluriglandular preparations is a bold man and one to be pitied. For he will be scoffed at for the theory which underlies his treatment, and he has a difficult task to perform in selecting the ingredients of his prescription.

There is little, if any, laboratory support for many of the extracts which are found in these compounds, but this is not tantamount to saying that they are useless or inert. Let us never forget that thyroid substance was proved by its clinical results rather than by laboratory findings. There are several cogent reasons why organic extracts should be of value, and recent researches have revealed possibilities hitherto unsuspected.

The clinical results of preparations of such organs as the thyroid, pituitary, and suprarenal gland are too well established to require any discussion here; although the question of whether all three have any therapeutic properties when administered by the mouth is not settled to the satisfaction of all workers. Their employment by the subcutaneous or intramuscular route produces results which leave no room for doubt as to their potency. It may also be admitted that the activity of pituitary preparations when given by mouth is beyond dispute, although the smaller doses which have hitherto been employed appear to be followed in some instances by no definite results. Pituitary feeding in suitable doses—and these may often have to be very large—has a definite and well established effect on metabolism; and the results of many clinicians support this contention. Suprarenal gland substance—both cortex and medulla—is also given by mouth. There are two reasons why this substance has not been as widely utilized by mouth as other glandular extracts; first, because its hypodermic use and local action overshadow more remote results when given by mouth; second, because the average suitable dose by the oral route has so far been undetermined.

In this paper it is proposed to consider the employment of pluriglandular preparations, the theory underlying such prescribing, and some clinical results.

It is only in recent years that administration of pituitary substance has been at all widely utilized; and even now the data relating to anterior pituitary organotherapy are lamentably deficient. This is partly due to the custom of using whole gland preparations, and partly, no doubt, to the gaps in our knowledge of the composition and chemistry of the pars anterior. Robertson has isolated a chemical constituent of this part of the gland, which he has named *tethelin,* and which he regards as the growth controlling principle. It is a lipoid, and is believed to be rapidly decomposed in the alimentary canal. To this characteristic may be due some of the uncertain effects of anterior pituitary organotherapy.

We shall refer at a later stage to some of the uses to which the pars anterior has been put in therapeutics. We may mention here, however, that there is laboratory evidence to prove that orally administered pars anterior produces definite effects in animals.

All workers in the organotherapeutic field are familiar with the difficulty of arriving at a decision as to what preparation to utilize, when commencing treatment by means of pituitary substances. On the one hand, it is almost universally believed that posterior pituitary substance is inert, when given by the mouth; while there is ample evidence, on the other hand, that whole gland pituitary organotherapy is an exceedingly efficacious weapon in many and varied disorders. It is exceedingly difficult to decide which part of the gland is at fault in a given case, and this has led in many instances to the choice of preparations of the whole gland when pituitary substance is prescribed. Among the well known uses of whole gland substance are the later stage of acromegaly, tumors and enlargements of the pituitary gland, epilepsy and pituitary headaches. The paresis of the bowel which sometimes follows anesthetics, occurs in the course of lobar pneumonia, and is occasionally seen in chronic invalidism from any cause, yields rapidly to the hypodermic administration of pituitary substance.

There are some disorders, however, in which anterior pituitary therapy is the method of choice, and there are conditions believed to depend upon hypofunction of the pars anterior. Foremost among such states is dystrophia adiposogenitalis, which has been reported by many observers to be favorably influenced by the administration of anterior pituitary substance. Some clinicians, however, combine other organic preparations with that from the anterior pituitary; one observer combining thyroid and ovarian with the hypophyseal substance, and claiming that it caused a redistribution of fat and an improvement in the sexual development. Whole gland pituitary substance has also been employed in these cases, but the majority of observers lean to the use of preparations of the anterior pituitary.

In considering pluriglandular therapy, we have first to decide whether the substances contained in a mixed product are such as will exert any effect whatever when taken by the mouth. In this article, we are concerned with oral therapy, as pluriglandular prescribing by any other route is little utilized.

We shall briefly refer to several organic substances, considered from this standpoint, and then discuss their application in pluriglandular form.

Thyroidin needs brief reference only. Its action is well known, in fact fresh uses are still being discovered for this substance. As the part of the thyroid gland in the bodily functions is becoming better understood, so its utility in a wide range of disorders is being established. Combined with pituitary substance, it forms a decidedly popular prescription, and is successful in many conditions, which appear to depend upon a hypofunction of one or both of these regulators of metabolism. There is no need to spend further time in discussing thyroid therapy, as I dealt with this subject in some detail recently (1). We shall turn, therefore, to its smaller, but in many ways equally vital neighbors, the parathyroids.

The first point which is of interest in this connection is that parathyroid substance has been shown to exert a definite action when administered by the oral route. Apart from glandular implantation, its employment by the mouth is at least equally efficacious to its hypodermic use.

The effects which follow parathyroidectomy in animals have suggested what may be the symptoms of parathyroid deficiency in man. Beyond this we are unable at present to go, although Hurst has put on record a case of parathyroid deficiency, which was cured by the oral administration of parathyroid substance. From the laboratory evidence, as well as from the clinical findings, this form of organotherapy would seem to be most useful in spasmodic conditions. It has therefore been tried in such disorders as epilepsy, eclampsia and chorea. There is no evidence that these diseases are connected with the parathyroid gland, so that any beneficial results noted must be regarded as due to the pharmacological action of this substance, rather than to its substitutive use.

Some observers have reported favorably from its use in the conditions just referred to, and, indeed, there is some reason why it should be beneficial, seeing that absence of parathyroid produces a state characterized by nervous instability and tremors, while epilepsy, chorea, and eclampsia share, in common with tetany, symptoms of this nature. Italian physicians perhaps more than those of other countries have been favorably impressed with their clinical results with this substance.

I, while frankly sceptical of the organotherapeutic properties of some of the substances to be found in manufacturers' catalogues, incline to the opinion that parathyroid substance will prove to possess a wider and more successful applicability than has hitherto been the case. It has been used in the tremors of the neuroses—more especially in paralysis agitans; in socalled anxiety conditions, in Graves's disease, in tachycardia, and in hyperpiesis. Combined with thyroidin it is reported to be useful in healing chronic varicose ulcers. Turning for a brief space to the theories which have been advanced to explain tetany, we find that three hold the field. These are, a decreased calcium deficiency, leading to neural irritability; an alkalosis; and the accumulation of methylguanidine, presumably due to the loss of parathyroids. Experiments have shown, however, that the onset of tetany varies according to the temperament of the animal. If the animal is pugnacious, and controlled largely by its basic instincts, the mortality from tetany is high, while in animals who have been handled gently for several generations the mortality is relatively low.

These results are interesting, as they are suggestive of the cause which underlies the long continued disturbances of the endocrine system which have resulted from the war. Here there were factors which bring to the surface instinctive reactions normally relatively dormant. It is not stretching the point to suggest that the war neuroses owe their resistance to treatment largely to the fact that endocrine disturbance succeeded disturbance of the mental equilibrium. As parathyroid substance can—certainly in some individuals—be absorbed from the digestive tract, and rectify errors of function, so we

shall probably see a more extended use of this hormone, when its properties and doses are better understood.

When we turn to a usual component of the pluriglandular prescription, namely, one or other of the genital glands, we realize at once that here is indeed a controversial subject. From the days of Brown-Séquard, testicular organotherapy has been the field upon which many a battle has been fought. Opposed to the enthusiastic assertions of Brown-Séquard, was the scoffing incredulity of his contemporaries. In the days in which we live, the optimistic paragraphs of manufacturers' catalogues are countered by the "not proved" verdict of the laboratory. The physician whose main work is the amelioration of the symptoms of his patients, turns to the manufacturers hoping their statements are correct, while the physiologist's warnings come as a chill blast to his new found therapeutic faith.

To decide between the manufacturers' assertions —many of which are founded purely upon empirical grounds—and the statements of the scientific investigators, is no easy task. For the latter tells us there is no laboratory support for the oral administration of, let us say, adrenal substance; while the former quotes from authors who have successfully utilized it in the treatment of disordered health. It is obvious that the *post hoc* argument is always available, when we are dealing with the living human subject. It is this fact which causes the accurate mind of the scientist to doubt the optimistic reports of the clinician.

In dealing with a subject such as this, we can best serve the reader if we warn him against accepting any statements as to the action of any organic substance, which contradicts accepted physiological facts. If a clinical report does this, it is indeed to be doubted. But where it is unsupported by laboratory proofs, nevertheless it may be right.

With this digression let us study the generative organs under three headings, as these will include those substances it is worth while to consider, namely, orchitic, ovarian, and prostatic substance.

Testicular extract, in spite of the unenviable prominence which it still receives, would nevertheless seem to be of considerable value. Transplantation experiments and operative procedures have proved beyond a doubt that the testicle possesses an internal secretion: and feeding experiments on animals show that it is absorbed by the oral route. Moreover, when it was administered to female chickens and pigeons the animals developed male characteristics.

Allowing, therefore, that properly prepared extracts are utilized, and the dose is regulated to the individual case, testicular extracts may be regarded as a legitimate component of a pluriglandular preparation. From the viewpoint adopted in this paper, this substance conforms with the standard in that an extract of the testicle contains an internal secretion, and this secretion is believed to be capable of absorption when administered by mouth.

Ovarian organotherapy is deserving of sympathetic consideration, if only on account of the excellent clinical results which have been reported from many quarters. It is important to consider it here in some detail, because its utility in combination with other organic preparations is very wide, and because the ovarian secretion is so intimately linked up with other of the regulators of metabolism, that it lends itself singularly well to embodiment in a mixed glandular prescription.

First, what is usually implied by the term ovarian extract? Fresh ovarian substance, derived from the ovaries of cows or pigs, and with an approximate dose of five grains, is what is meant. This may be administered in tablets or capsules by the mouth, or in a sterile liquid form for subcutaneous injection. Some workers in this field, however, lay stress upon the importance of an extract of the corpus luteum, as likely to contain the most active internal secretion of the organ. Other workers have isolated two different substances, both active physiologically and mutually antagonistic in their effects. Statements are made that an extract of the corpus luteum has the power to regulate menstruation, to increase the flow where this is pathologically scanty, and to inhibit excessive loss where this is occurring. The work of one school, however—the investigators who have isolated two antagonistic autacoids—suggests that one hormone stimulates the catamenia, while the other checks it. This may explain the assertion apparently somewhat paradoxical—that extract of corpus luteum regulates menstruation.

But little that is definite can be stated with reference to whether the ovarian extract should contain luteal substance or not. One observer, whose work on this subject entitles him to respectful attention, believes that the presence or absence of luteal material is of no great import. On the other hand, another investigator is loud in his praise of an extract of corpus luteum, as opposed to whole ovarian substance. One other variety should be mentioned, namely, ovarian residue. This consists in an extract of the ovary after removal of the corpora lutea.

It is not possible to dogmatize at present, as to which of these preparations possesses the greatest activity. That some definite clinical results may be expected from ovarian organotherapy is certain, in a fair percentage of suitable cases.

There are certain facts known about the prostate gland, which make it likely that it possesses an internal secretion, apart from its better established functions. It is an interesting fact and one worthy of notice, that this gland tends to hypertrophy only when the testicular secretion is on the wane: and it has therefore been suggested that prostatic overgrowth —apart from tumor formation—may be in the nature of a compensatory hypertrophy.

Certain experiments have suggested that prostatic-fed tadpoles grow faster than controls, and atrophy of the testes has been noted to occur in rats from whom the prostate had been removed (Macht and Bloom). These and other facts make it likely that the prostate has an internal secretion, which enters into the socalled hormone balance, but nothing definite is as yet known on this point.

It is referred to in this paper for two reasons, first, because its clinical use appears to be extending, and because it has found a place in certain pluriglandular preparations. Second, because there is practically no literature on the endocrinological aspects of this gland: it would possibly repay the time and labor expended if some clinical reports could be furnished as to the results of treatment by prostatic substance, both in local disorder such as hypertrophy, and in

more general states of ill health, such as are associated with disorders of the functions of other of the organs of internal secretion.[1]

No account of pluriglandular therapy would be complete without some reference, however brief, to other extracts which are frequently incorporated by manufacturers. I have tried, in writing this paper, to select those tissues which are most usually to be found in the catalogues of chemists who furnish organotherapeutic products. I have seen it stated, usually by experimental physiologists, that with the exception of the thyroid gland, no other organic preparation is of the slightest use as a substitutive agent. We are all, unfortunately, familiar with the disappointments which have met us in attempting to treat Addison's disease by suprarenal gland substance. Equally unsuccessful has hitherto been the employment of pancreatic substance in metabolic disorders such as diabetes.

Let us, however, keep clearly before us this fact, that while substitutive therapy has few clearly proved successes to claim, fresh fields are yearly being opened, as is evidenced by the recent work on pancreatic extract, which has resulted in the isolation of insulin from the islands of Langerhans. But this is only one aspect of organotherapy—that usually called substitutive. Many organic extracts, many tissues derived from various organs, are therapeutically active, and possess definite physiological properties. As an example of this, we may quote the effect of pituitary extract upon the uterus, and its well recognized action in paralytic distention of the bowel. I am far from joining the ranks of those who see nothing in organotherapy but a field for the manufacture on a large scale of fresh products for the practitioner to prescribe. But it does seem wise to issue a warning that not all the substances which appear in catalogues are as active as we are sometimes led to suppose.

Mammary substance is an example of this. I have good reason to believe that feeding on mammary substance exercises a control on menorrhagia. When we turn to the catalogues, we learn that it is invaluable for this action: the author of a recent book dealing with organotherapy, however, dismisses mammary extract as of little import.

The claimed action of the mammary gland substance concerns two main functions, its use as a lactogogue, and its inhibitory action on the catamenia. The former is a subject on which there is considerable disagreement, although it is fair to say that not a few clinicians are convinced of its activity. I have already referred to its second action; with one more reference, we will leave the subject. It is asserted by some workers that its exhibition to patients suffering with uterine fibroids causes a diminution in the size of the tumors. Of this I have had no experience.

The placenta, having physiologically strong claims to recognition by endocrinologists, has received some degree of attention. It has been argued that a hormone is elaborated by the placental tissue, whose work is the preparation of the mammary gland for lactation. Placental extract has therefore been administered to nursing mothers whose milk was scanty. Several observers have reported favorably, after clinical experience in an adequate number of patients who have been treated by the oral administration of placental extract; some have not been certain enough to express a definite opinion as to the results; while still others are frankly disappointed.

Considerably more evidence is needed before placental extract is deserving of admission as an active organotherapeutic agent.

The thymus has been indicted with many crimes, among those being the accusation that it is *particeps criminis* in Graves's disease. As thymus substance is a not unusual ingredient of the pluriglandular prescription, a few words as to its action and use may not be out of place.

The exact rôle of the thymus in Graves's disease has not been determined. On the one hand, it is stated that this gland is enlarged in this disease, and that the disease has improved after thymectomy. Against this must be put the reports of cases of the same disorder which have improved definitely on thymus feeding.

Thymus medication has also been employed in myxedema, delayed development, marasmus, acromegaly, rickets, dementia precox, and Addison's disease. Reports of the results of thymus feeding in such diseases as these, suggest that the proceeding is occasionally followed by marked success, sometimes by amelioration of the symptoms, and in some cases by failure.

As no hormone has been obtained from this organ, any organotherapy must rest purely upon empirical grounds.

In view of the recent work on the pancreatic secretion and the possibilities attaching thereto, it is not proposed to consider the internal secretions of digestion here.

When we come to consider such substances as extracts of nerve tissue, of the brain, spinal cord and sympathetic ganglia, we are inclined to scoff at the ignorance which suggests their inclusion in any mixed gland preparation. To give extracts of the cerebral cortex to patients suffering from a psychoneurosis is surely atavistic, and is harking back to the era of incantations and sorcery! But, unless one is prejudiced, not even this prescription, foolish and fatuous as it seems, can be dismissed as easily as this. Voltaire said, *"L'art est difficile, la critique est facile."* The art of treating disease is indeed difficult, however easy it may be to jeer. Can there be any solid groundwork of reason for prescribing nervous tissue? Does it contain any substance specific to itself, and if so, can this do anything physiologically or where abnormal states exist?

So far as we know at present, this tissue is rich in lipoids, and according to some observers there is reason to believe that a lipoid is specific to the tissue from which it is obtained. There is little reason, however, for the wide use to which neural extracts are put, and it is the indiscriminate, irrational and wholesale use of substances such as this which does the practice of organotherapy no good.

Before concluding this paper, let us take at random

[1] I have recently encountered in the literature on this subject an interesting account by Hoxie of a case in which prostatitis was associated with submanubrial dullness, which latter was ascribed to thymic hyperplasia. The general symptoms were those of myasthenia and socalled nervousness. According to this report the chest condition cleared up when the prostatitis was relieved. This case suggests a close association between the prostate and thymus, and, if the former gland is in close relation with other members of the endocrine hierarchy, it may be that it is responsible for deviations from health which are at present unassociated with it in theory.

one or two examples from catalogues and criticize the substances contained therein, their relative actions and their doses.

The first example contains thyroid and pituitary substance and a small dose of suprarenal gland. The dose of thyroid in this prescription is a small fraction of a grain. This is obviously wise, as many a physician has found out that the effects of thyroid therapy are widespread, and are likely to be dramatic, more especially in patients much in need of its help. The dose of pituitary (anterior) is even smaller than that of thyroid. I suppose every physician is entitled to form his judgment on matters such as the suitable dose to employ, and this judgment must depend, to some extent, upon his experience and results. I shall not therefore lay myself open to a charge of dogmatizing, if I remark that, in my opinion, a fraction of a grain of pituitary extract (for oral administration) is useless and misleading, as it is too small to produce any results, and the physician therefore concludes that pituitary therapy is not suited to the particular case. Better leave it out altogether, than include it in what is such an obviously inadequate dose, even at the initiation of treatment.

My personal experience has led me to reduce the dose of thyroid substance (except in certain conditions, happily well defined) and to increase that of the pituitary preparations.

While, therefore, in continuing the discussion of this formula, I can find no fault with the dose of thyroid, I should treble the dose of pituitary substance. Personally I have no objection to a basis of nerve tissue.

The inclusion of both thyroid and pituitary substance in the same prescription has a good deal to recommend it, provided the dose of the latter constituent is adequately measured by accepted standards. Both of these substances are stimulators of metabolism, both are active, and both are useful in assisting elimination. I am not convinced, however, that a fraction of a grain of suprarenal gland is going to make or mar the prescription!

The combination of thyroid, pituitary, and an extract of one of the gonads is also a popular formula. Some manufacturing chemists offer a pluriglandular product for the use of males, and another for the use of females; the former having orchitic substance in its composition, and the latter ovarian. On general grounds, and allowing that these substances can be efficacious when taken by the mouth, such a combination can be useful in several types of disorder. As all the components are stimulators of metabolism, they find their *métier* at such times as the climacteric (in both sexes) and might well be selected when premature senility, obesity, in the middle decades of life, or disorders characterized by retention of toxic wastes claim our attention. It may be that the bulk of the work done, and the majority of the benefit which ensues, is due to the thyroid substance. As I have elsewhere stated, I believe that the field for thyroid therapy is ever widening, and that it will continue to widen for many years, as fresh applications of this substance are devised by enterprising physicians.

Its use, and that of many other organotherapeutic preparations, constitutes an attempt, on rational lines, to find shortcuts to normal functions. In many instances, no doubt, therapeutic impatience has outstripped physiological reasoning. And yet, one cannot fail to see that a gigantic new system of treatment has arisen from the minute thyroid grain. A system, moreover, which is rapidly acquiring as wide a range of components as exists in the inorganic pharmacopœia. It is to be hoped, however, that organic polypharmacy will never equal the records held by the inorganic variety!

In the treatment of backward children, many organic preparations have been prescribed. Among these are the thyroid, pituitary (anterior), thymus, pineal, and gonadic extracts. In the mental deficiency which has an underlying hypothyroidism, the exhibition of thyroid extract stands on a firm foundation and is followed by brilliant results. There are also cases in which the signs of hypothyroidism are slight or absent, in which amelioration follows thyroid therapy.

There are, however, many backward patients—and these are of course in the large majority—who do not appear to owe their abnormality to lack of thyroid and who support this belief by deriving no benefit from its exhibition.

With the exception of those children, who owe their mental state to congenital cerebral deficiency, a large proportion of socalled backward children are instances of endocrine dysfunction. They should be helped by a combination of education, environment, and organotherapy.

The glandular substance next in favor to thyroid in this connection is undoubtedly the pars anterior of the pituitary. Let us consider what type of child is likely to benefit from this prescription.

Most clinicians are familiar with the backward, slowwitted child, fat, with poor attentive control and deficient memory. Such children do not, however, always exhibit the physical signs of hypothyroidism, the pulse is not slow, the thyroid gland is palpable, the skin is not harsh and dry—in a word, their mentality resembles the cretin, while their physical signs do not.

It is probable that these children have suffered from thyroid deficiency in their earlier years, that another secretion or secretions has taken on the labors which the thyroid should be performing, and that in time the latter gland has caught up with the growth of the individual, and so, to some extent, the signs of its deficiency are lacking on examination; in other words, it has covered up its tracks.

It comes about, therefore, that an individual such as this may have signs of exhaustion of a gland other than that which has been primarily at fault, because the vicarious deficiency of another secretion has taken undue toll of its resources. Speculation, of course, but the reasoning underlying this is supported by the results of treatment. Furthermore, backward children often rapidly improve at such times as puberty, when fresh internal secretions are thrown into the circulation. Indeed, the characters of many children undergo a complete transformation at such a time as this, and this change must owe its character to the endocrine glands.

Our therapeutic object should be, then, to stimulate those secretions which are responsible for growth, and to do this we may employ, for example, thyroid substance, even though we do not believe the

secretion of this gland to be lacking at the time.

Extract of pars anterior is of great value in the organotherapeutic treatment of delayed development. The records of the help it gives in such cases are good; it is not destroyed in the processes of digestion, and it is well tolerated. Where, as is often the case, there is delayed puberty, the appropriate gonadic substance may with advantage be added to the prescription.

The dose of pituitary substance may be increased to several grains unless there are any contraindications. I have occasionally noted a gastrointestinal disturbance to follow the larger doses of pituitary substance, but this is unusual, and can easily be checked by reducing the dose and subsequently increasing it more gradually. Occasionally a headache follows the exhibition of pituitary substance, but this is not often encountered, and, speaking broadly, this substance is well borne.

The pineal gland requires a brief mention. It is known that this gland is associated with growth and with sexual development. Feeding young animals with pineal substance has been shown to cause acceleration in growth and sexual development. Arguing from the results of these experiments, investigators have administered pineal substance to backward and mentally deficient children. The recorded results are not convincing, but it must be remembered in considering clinical trials of organotherapeutic substances, first, that the preparation may not be active, and, secondly, that the dose administered may be quite inadequate. This was well shown by the earlier experiments in pituitary feeding, where small doses only were given. Later experiments, checked by metabolic tests, showed that relatively enormous doses were required in some cases to produce the changes which, in other cases, had resulted from relatively minute doses.

In spite, therefore, of the absence of good results recorded from a utilization of pineal substance in the treatment of the backward child, it does not follow that, with more extended trials, this preparation will not be shown to be of some use therapeutically. Apparently (to judge from the catalogues) it is being used widely, if in a somewhat haphazard manner, for this class of case. What is required is a series of cases, with controls carefully recorded, and with the results of pineal feeding followed up for some years. It is only in this way that the clinician will be able to satisfy himself that a glandular preparation can do what the manufacturers state for it. It is unsatisfactory to know that feeding an animal with a particular gland produces definite changes in the laboratory, but that the same substance is inert when administered to a human being.

We are at present on the outskirts of a subject possessing vast possibilities, but our advance into its realm must be accompanied by caution. All pioneers have to retrace their footsteps and retract some of their speculations, as further knowledge is obtained. Rash speculation tends only to swamp those facts of which we are in possession; but reasoned deduction from facts capable of proof is a different and legitimate method of procedure.

Organotherapy must be led by endocrinology, for only in this order can sound and lasting results be hoped for in the establishment of a rational method of treatment.

REFERENCE.

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A Case of Exophthalmic Goitre and Diabetes Mellitus*

By J. ARTHUR BUCHANAN, M.D.,
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The occurrence of exophthalmic goitre and diabetes mellitus in the same patient presents an interesting problem for therapy. The end result of combined medical and surgical management of the two diseases in certain instances is pleasing.

Case.—The patient, Mrs. A. O. W. (No. 671), aged fifty-two years, first came to the Clinic on November 1, 1921, because of fainting spells; excessive thirst; cessation of menstruation; the passing of large quantities of urine; shortness of breath; generalized weakness, and gradual loss of weight. The symptoms had been present for about six months. She had been troubled with a good deal of pain in the right arm, and occasional mild generalized headaches. The normal weight was 140 to 150 pounds, but at the time of admission she weighed 124½ pounds. The thyroid gland was enlarged. The blood pressure was 150 systolic and 80 diastolic. The pulses were 130 each minute. The radial arteries were palpable. The uterus was completely prolapsed, and a large left inguinal hernia was found.

*From the Section in Medicine, Pueblo Clinic.

The subsequent course of this patient is given in the clinical notes in combination with the laboratory findings. The twenty-four hour urinary output is reported in each instance, unless otherwise stated. Where sugar and albumen are absent the report is not included.

11/3/21—Urine, 4,000 c. c.; sp. g., 1.027; albumen, faint trace; sugar, 160 grams.

11/8/21—Urine, 3,500 c. c.; sp. g., 1.037; albumen, faint trace; sugar, 145.95 grams.

11/11/21—Blood sugar, 452 mgs. for each 100 c. c. of blood. Wassermann on blood serum reported as four plus.

11/14/21—Restricted diet, but food not weighed. Sugar tolerance not determined.

11/17/21—Urine, 2,000 c. c.; sp. g., 1.018; albumen, faint trace.

11/22/21—Urine, 2,000 c. c.; sp. g., 1.014; albumen, faint trace.

11/25/21—Complaining of inability to see properly. Nothing abnormal in eyes.

11/29/21—Urine, 2,000 c. c.; sp. g., 1.016; albumen, faint trace.

12/1/21—Had diarrhea.

12/13/21—Urine, 1,500 c. c.; sp. g., 1.015.

12/15/21—Has been having paroxysms of severe pain in lower left abdomen. The attacks last for a few hours. Pulses, 100 each minute; blood pressure, 140 systolic and 84 diastolic; weight, 126 pounds.

12/27/21—Urine, 2,000 c. c.; sp. g., 1.010.

12/29/21—Weight, 124 pounds (56.3 kg.). Had an attack of pain, left side of lower abdomen, lasting about six hours. Says it is difficult to urinate during these attacks.

1/3/22—Urine, 2,000 c. c.; sp. g., 1.024.

1/5/22—Had a slight cold in nose.

1/17/22—Urine, 1,500 c. c.; sp. g., 1.030; albumen, very faint trace; sugar, 31.5 grams.

1/24/22—Urine, 1,500 c. c.; sp. g., 1.025.

1/31/22—Urine, 2,000 c. c.; sp. g., 1.035; sugar, 67 grams.

2/9/22—Urine, 2,000 c. c.; sp. g., 1.025; sugar, 50 grams.

2/16/22—Urine, 2,000 c. c.; sp. g., 1.026; sugar, 32 grams.

2/23/22—Urine, 2,000 c. c.; sp. g., 1.025; sugar, 25 grams.

3/2/22—Urine, 2,500 c. c.; sp. g., 1.027; albumen, very faint trace; sugar, 50 grams.

3/7/22—Fullness in head; blood pressure, 160 systolic and 90 diastolic.

3/9/22—Urine, 2,500 c. c.; sp. g., 1.025; albumen, very faint trace; sugar, 200 grams.

3/12/22—Sugar in urine. Patient had finished a course of antiluetic treatment, and believed that to be the cause of the sugar flareup, but study of the diet insrtuctions showed diet to be the cause.

3/14/22—Urine, 2,000 c. c.; sp. g., 1.012.

3/22/22—Urine, passed specimen; sp. g., 1.017; sugar present.

4/5/22—Urine, passed specimen; sp. g., 1.030; albumen, very faint trace; sugar present.

4/10/22—Is feeling well; weight, 126 and one quarter pounds.

4/11/22—Wassermann on blood serum reported as four plus.

4/18/22—Urine, 1,500 c. c.; sp. g., 1.025; albumen, very faint, trace; sugar, 45 grams.

5/2/22—Urine, 1,500 c. c.; sp. g., 1.028; albumen, very faint trace; sugar, 6.5 grams.

5/23/22—Urine, 2,000 c. c.; sp. g., 1.039; albumen, very faint trace; sugar, 50 grams.

5/25/22—Has been feeling quite well except for hay fever. Weight, 129 and one half pounds; blood pressure, 165 systolic and 94 diastolic.

6/14/22—Urine, 2,000 c. c.; sp. g., 1.023; sugar, 31.2 grams.

8/22/22—Urine, passed specimen; sp. g., 1.021; albumen, very faint trace; sugar present.

8/25/22—Pulses, 120 each minute; blood pressure, 140 systolic and 85 diastolic; weight, 122 pounds; feeling weak.

8/30/22—Urine, 3,000 c. c.; sp. g., 1.029; albumen, very faint trace; sugar, 135 grams.

8/31/22—Pulses, 102 each minute, and irregular; weight, 125 pounds; feeling better.

9/13/22—Urine, 3,000 c. c.;; sp. g., 1.025; sugar, 93.6 grams.

9/15/22—Physical exam.: Blood pressure, 160 systolic and 90 diastolic; pulses, 120 each minute; looks very warm; sweating freely; nervous; finger nails linear corrugation, plus two; brittle, plus one; turned up, plus one; static tremor of fingers present; face flushed; eyes stary; right quadriceps strength, minus two; left, minus one to two; thyroid, smooth, hard enlargement; left lobe, two x one and one quarter in.; right lobe not felt; no nodules; no bruits nor thrills; tongue red; edema of left leg, minus one; stripped weight, 119 pounds; height, sixty-one and one quarter in.; age, fifty-three years; total calory requirement, 1,293. The patient was put on thirty-six grams of protein, 110 grams of fat and seventeen grams of carbohydrate. The diet had to be weighed and measured accurately.

9/19/22—Urine, 2,000 c. c.; sp. g., 1.012; acetone and acetoacetic acid present; weight, 118 and one half pounds.

9/20/22—Basal metabolic rate, plus 55. Increased diet by ten grams of protein, eighteen grams of fat, and forty grams of carbohydrate.

9/22/22—Has been having pain in left abdomen; now profuse diarrhea; vomited for two days; marked odor of acetone on breath; pulses, 132 each minute.

9/24/22—Pulses, 102 each minute; no diarrhea; acetone gone from breath.

9/25/22—Urine, 2,000 c. c.; sp. g., 1.038; sugar present; acetone and acetoacetic, none.

9/27/22—Urine, 2,500 c. c.; sp. g., 1.015; sugar, 10.5 grams; pulses, 114 each minute; weight, 119 pounds; feels well; diet reduced by four grams of protein and twenty grams of carbohydrate.

9/29/22—Urine, 3,000 c. c.; sp. g., 1.022; had diarrhea today; weight, 116 and one half pounds; pulses, 120 each minute; sweating and very warm.

10/1/22—Acetone and acetoacetic acid present in urine. Patient sent to hospital to prepare for thyroidectomy.

10/5/22—Acetone and acetoacetic acid still present, but generally improved; pulses less rapid; weight, 113 pounds; basal metabolic rate, plus fifty-two.

10/6/22—In bed in hospital one week; still running acetone and acetoacetic acid; pulses better; strong odor of acetone on breath.

10/8/22—Pulses slower; general appearance improved.

10/12/22—Acetone, faint trace.

10/13/22—Acetone still in urine; less nervous; pulses slower; blood sugar, 115 mgs. each 100 c. c. of blood.

10/14/22—Urine, 2,000 c. c.; sp. g., 1.022.

10/15/22—Urine, acetone and acetoacetic acid free; put on list for operation; surgical risk estimated as three on basis of four.

10/16/22—Partial thyroidectomy under ether anesthesia by Dr. Black; pulses very rapid after operation; acetone and acetoacetic acid present in urine in the evening.

10/17/22—Refused nourishment; general condition good.

10/18/22—Had desire for food; pulses, 160 each minute; acetone and acetoacetic acid not found in urine.

10/20/22—Pulses, 140 each minute; skin warm, but no sweating; appetite was normal.

10/21/22—More comfortable; things do not bother as they used to; not so warm; can keep bed clothes on now, something she has been unable to do for over a year; pulses, 110 each minute; pathological report: Hypertrophy and hyperplasia—exophthalmic goitre.

10/26/22—Postoperative course has been very uneventful; weight, 108 pounds; pulses, 90 each minute; basal metabolic rate, plus five.

11/2/22—Urine, 2,500 c. c.; sp. g., 1.022.

11/3/22—Pulses, seventy-eight each minute; calm; no sweating; feels "so different"; has to use more covers at night; appetite is unusually keen; sleeps soundly all night; increased diet by twenty-eight grams of carbohydrate, nine grams of protein and sixteen grams of fat.

11/11/22—Urine, 3,500 c. c.; sp. g., 1.016; albumen, faint trace.

11/20/22—Weight, 113¾ pounds; pulses, ninety each minute; has noticed some edema of the legs in evening; looks well; feeling stronger; strength of thigh muscles improving.

11/27/22—Urine, 3,500 c. c.; sp. g., 1.020; albumen, very faint trace; weight, 115 and one quarter pounds; pulses, ninety each minute; still slight edema of legs; appetite not excessive; feels very well; blood pressure, 190 systolic and 110 diastolic.

12/18/22—Urine, 3,000 c. c.; sp. g., 1.025; albumen, faint trace; acetone present; has had more or less headache for the last week; no fever; ached all over body; eyes feel weak; morning headache; weight, 121½ pounds; pulses, eighty-four to ninety each minute; blood pressure, 178 systolic and 100 diastolic.

12/26/22—Bowels have not moved; vomited; some sense of soreness in abdomen; strangulated left inguinal hernia; passing gas, but not so much today as before; some distention; active peristalsis; tenderness plus one over lower abdomen; on admission to Parkview Hospital, face flushed, skin red, elbows red, and complaining of intense itching of whole body. Reduction of hernia under local anesthesia. Bowel was quite dark, but color gradually returned.

12/27/22—Urine, passed specimen; sp. g., 1.018; albumen, four plus; sugar present; hyaline granular and epithelial casts, twenty to each microscopic field; patient moaned constantly most of the night; expelled a great deal of flatus; abdomen distended; no appetite; nauseated most of the time.

12/28/22—Projectile vomiting; complaining of pain in the abdomen, which is distended, but soft; belches frequently; during the night vomited a thick brown fluid with fecal odor.

12/29/22—Vomited frequently; restless and moaning frequently; expelling considerable flatus; during afternoon rested well.

12/30/22—Slightly bloody discharge from wound; ex-

pelling gas frequently; fair results from high medicated enema.

12/31/22—Small constipated stool; drinking large quantities of water; no nausea nor vomiting; slightly bloody discharge from wound.

1/1/23—Restless; large semiformed stool; more drainage from incision.

1/2/23—Fecal drainage from wound.

1/3/23—Generally feeling well; drainage from wound decreased.

1/4/23—Generally improving, but has a large fecal fistula.

1/6/23—Urine, 1.687 c. c.; sp. g., 1.010; albumen, faint trace.

1/10/23—Had an attack of abdominal pain with diarrhea; looks well; skin peeling from hands and arms.

1/14/23—Feeling better; little drainage from wound now; skin has desquamated in large and small scales from whole body.

1/19/23—No drainage for three days.

1/22/23—Urine, 2,500 c. c.; sp. g., 1.016; albumen, faint trace.

1/23/23—Increased diet by 12.5 grams of carbohydrate, 16.5 grams of protein and twelve grams of fat.

2/2/23—Looks well; passes large quantity of urine one day and less the next.

2/17/23—Weight, 122½ pounds; blood pressure, 180 systolic and ninety-five diastolic; pulses, ninety-six each minute; has some swelling of the legs at times; complaining of slight pains in legs and arms; urine was sugar free; diet is sufficient to satisfy appetite.

3/29/23—Weight, 131¼ pounds; blood pressure, 180 systolic and ninety diastolic; pulses, eighty-four each minute; says legs swell, but general strength greater than for years; satisfied with diet; blood sugar, 187 mgs. each 100 c. c. of blood.

4/13/23—Weight 137 pounds; patient is the picture of health; no increased appetite; feet swell in afternoon; pulses, ninety-six each minute; no dyspnea on exertion.

5/13/23—Weight, 142½ pounds; blood pressure, 190 systolic and 110 diastolic; pulses, ninety each minute; has no complaints; appetite is normal.

6/2/23—Weight, 142 pounds; had been having pain just to the left of the umbilicus; there were no objective signs.

7/14/23—Weight, 150¼ pounds; had hay fever; no swelling of the feet; pulses, ninety-six each minute; still has some pain over the left side of the abdomen; bowels regular; blood pressure 180 systolic and 100 diastolic.

COMMENT.

For several years there has been discussion concerning the relation of the thyroid gland to diabetes mellitus. The literature on this subject has been summarized by Fitz (1), who, at the same time, briefly reported the results of surgical treatment of hyperthyroidism when complicated by diabetes mellitus. The series was small, but from the end results he felt that it did not seem overradical to advise operation for properly selected and prepared patients, since the risk does not seem out of proportion to the possible benefit to be gained, and since the prognosis is otherwise grave.

The medical management of exophthalmic goitre and diabetes mellitus are so diametrically opposite that success could hardly, if ever, be realized. The patient with the former disease must be overfed in order to maintain body weight and strength, whereas the patient with diabetes mellitus must live on a restricted diet. The problem in a patient with the two diseases is almost impossible of solution to the advantage of the patient without the eradication of one of the two diseases. Diabetes mellitus cannot be eradicated. At present the most satisfactory method of reducing the hyperthyroidism appears to be by surgical measures. The introduction of insulin will help to minimize the surgical risk in these patients.

The data in table 1 show the steady improvement

TABLE 1.

SHOWING STEADY INCREASE IN CARBOHYDRATE TOLERANCE AFTER THYROIDECTOMY.

Grams of Carbohydrates.	Grams of Protein	Grams of Fat.
17	36	110—Basic diet, 9/15/23
28	13	5—Increased, 9/20/23
45	49	115—Urine contained 10.5 grams sugar
20	4	—Reduction, 9/27/23
25	45	115—Total food tolerance before thyroidectomy
28	9	16—Increase eighteen days after thyroidectomy
12.5	16.5	12—Increase, 1/23/23
65	70	143—Present diet, on which urine is sugar free and patient has normal appetite.

TABLE 2.

SHOWING IN KILOGRAMS THE WEIGHT CHANGES BEFORE AND AFTER THYROIDECTOMY.

Before Thyroidectomy		*After Thyroidectomy*	
Date		*Date*	
Normal	63.6	Normal	63.6
11/1/21	56.5	10/26/22	49.0
12/15/21	57.2	11/20/22	51.7
12/29/21	56.7	12/18/22	55.2
4/10/22	57.3	2/17/23	55.6
5/25/22	58.8	3/19/23	59.6
8/25/22	55.4	4/13/23	62.2
8/31/22	57.0	5/13/23	64.7
8/15/22	54.0	6/2/23	64.7
9/19/22	53.8	7/14/23	68.2
9/29/22	52.9		
10/5/22	51.3		

that has occurred in the carbohydrate tolerance of the patient, while table 2 shows weight changes. There may be a relation between the thyroid and the pancreas in diabetes mellitus, or there may not be. The improvement in the general nutrition of the patient may be due entirely to a return to a normal rate of tissue loss and repair. The increase of carbohydrate tolerance probably indicates a greater endogenous production of insulin or better utilization of the normal output, or both. The patient now diets to keep from gaining more weight as well as to keep her diabetes under control.

The value of weighing the food, in caring for patients with diabetes, is shown in this patient, as sugar has not appeared in the urine while following this regime. The co-operation on the part of the patient has always been entirely satisfactory. The operation for intestinal obstruction would have been hazardous in an improperly controlled diabetic, and still more so if the hyperthyroidism of exophthalmic goitre were present.

The presence of syphilis does not appear to affect this patient's life in any way. There are no organic signs of syphilis, and in view of that fact, no further antiluetic treatment has been advised, even in the face of repeated four plus Wassermann reactions.

The end result in this instance by breaking one link in the association of the two diseases in the same patient is such as to stimulate a repetition of the same procedure under similar circumstances. The earlier the hyperthyroidism is eradicated, the greater the chances of success.

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Goitre Hearts

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At the present time when surgeons, physicians, anesthetists, radiologists, and even psychotherapeutists are interesting themselves in goitres and their treatment, the following brief remarks on the condition of the heart in goitre may be neither out of place nor inopportune. The association between disease of the thyroid and the heart has been long known and has been commented upon especially by German writers. The following remarks are based on personal observations made in several hundred cases, the majority having been referred to me by James Berry or C. A. Joll for cardioanalysis prior to operation.

Roughly speaking goitre hearts fall typically into two main groups, 1, pneumomechanical; 2, thyrotoxic.

PNEUMOMECHANICAL HEARTS.

Pneumomechanical hearts occur typically in those cases where, owing to thyroid enlargement, there is definite pressure on the vessels and nerves in the neck, together usually with a varying degree of obstructive dyspnea due to pressure on the trachea. Pressure on the veins leads to obstructed venous return, small input, and consequently small output with rapid heart action.

The forced inspiratory efforts mean increased suction action and the heart ultimately becomes fatigued and atonic and so enlarged. X ray examination usually shows a rapid, rather large, somewhat horizontal heart, resting on the diaphragm. Such hearts are most common in cystic adenomata, but may occur in other thyroid enlargements. Electrocardiographic examination shows a physiological tachycardia, but the P (auricular) waves are not unduly increased in amplitude and do not generally equal the T (ventricular) waves.

A right sided preponderance is not infrequently present. The peripheral vessels are constricted, so that in spite of the small output, the blood pressure is usually high.

These hearts, although rapid and somewhat enlarged, in uncomplicated cases are neither poisoned nor degenerated and hence rapidly recover after operation.

THYROTOXIC HEARTS.

Thyrotoxic hearts are seen in cases of hyperthyroidism, and especially in Graves's disease (1). They are rapid—120 or more—while the beat is augmented. The input is not interfered with and the peripheral resistance is usually relaxed and the blood pressure low, due to vasodilatation, caused by a depressor substance which has been isolated from the gland in these cases. Hence the flushed, warm, moist skin and increased susceptibility to heat so well known in hyperthyroidism.

Myocardial fatigue, atonia, valve incompetence with actual dilatation, toxemia and myocardial degeneration may all result if the case continues for any length of time. On x ray examination the heart appears typically rather large and horizontal, the apex often being outside the nipple line, while electrocardiographic examination shows all grades of curve from a simple physiological tachycardia in recent cases, to definite myocardial degeneration, indicated by an increased PR interval (= diminished conductivity of auriculoventricular bundle), auricular fibrillation, or some other marked abnormality in the form of complexes.

These hearts differ from the pneumomechanical hearts, chiefly in that they are poisoned and degenerated as well as fatigued, and hence not only add materially to the risk of an operation, but take a considerable time to recover after an operation.

A primary pneumomechanical heart may present thyrotoxic signs, and either a pneumomechanical or thyrotoxic condition may be engrafted on a heart which has previously been damaged by some antecedent disease such as rheumatic fever, when the risk assessment for operation becomes extremely difficult.

The main features of the pneumomechanical and thyrotoxic hearts and their associated circulatory conditions may be summarized as follows:

PNEUMOMECHANICAL.	THYROTOXIC.
A. *Heart.*	A. *Heart.*
1. Rapid, but usually below 120.	1. Rapid, usually 120 or above.
2. Beat not augmented.	2. Beat augmented.
3. Small in size and only enlarged later.	3. Usually enlarged.
4. Input small.	4. Input normal.
B. *Myocardium.*	B. *Myocardium.*
1. Usually slightly exhausted.	1. Usually definitely exhausted.
2. Atonia slight.	2. Atonia usually marked.
3. Dilatation slight or absent.	3. Dilatation very often present
4. Degeneration usually absent.	4. Degeneration often present.
5. Valve incompetence not very common.	5. Valve incompetence usually present.
C. *Pericardium.*	C. *Pericardium.*
1. Basal rub not very common.	1. Basal rub present in over fifty per cent. of cases.
D. *Electrocardiogram.*	D. *Electrocardiogram.*
1. Rightsided preponderance not uncommon.	1. Leftsided preponderance not uncommon.
2. PR interval usually normal (below one fifth seconds).	2. PR interval often one fifth or above.
3. P waves usually less in amplitude than T waves.	3. P waves usually=T waves in amplitude.
4. Auricular fibrillation rare.	4. Auricular fibrillation common (twenty per cent.)

ASSOCIATED PERIPHERAL CONDITIONS.

PNEUMOMECHANICAL.	THYROTOXIC.
1. Peripheral vessels not relaxed.	1. Peripheral vessels markedly relaxed.
2. Venous tone relatively high.	2. Venous tone relatively normal.
3. Capillary pulse absent.	3. Capillary pulse often present.
4. Arterial blood pressure normal or raised.	4. Arterial blood pressure triphasic, usually low (ten to twenty per cent.)
5. Digitalis slows rate and increases tone.	5. Digitalis does not slow but increases tone.

AURICULAR FIBRILLATION.

Auricular fibrillation is of such special interest in thyroid cases that the following additional notes may be of interest:

Normally the auricular muscle fibres contract in an orderly coordinate manner, the contraction commencing in the region of the sinoauricular node and spreading down toward the ventricle. In auricular fibrillation this coordinate contraction does not occur, the different bands of muscle contracting irregularly and more or less independently. The degree to which this dissociation and ineoordination has occurred determines whether the resulting fibrillation is of the socalled coarse or fine variety. In my own series of cases, fifteen per cent. showed auricular fibrillation, ten per cent. exhibiting the condition before, and five per cent. developing it after operation. Generally speaking, the condition develops after the disease has been in progress for some years, and must be regarded as indicative of the fact that the myocardium is profoundly poisoned or that degeneration has definitely commenced. Occasionally Graves's disease starts with auricular fibrillation, and in these cases the condition usually persists. Not infrequently (about five per cent.) auricular fibrillation develops during or soon after operation on the thyroid and may occur after any operation from simple ligation to extirpations of varying extent. Usually the condition is only temporary. Its onset is often synchronous with a rise in blood pressure (2).

On the other hand, cases of Graves's disease which show auricular fibrillation and may in some cases have exhibited it for years, frequently cease fibrillation after removal of part of the thyroid, especially if treated by quinidine, which appears, in many cases at any rate, to influence materially such cases after a partial thyroidectomy. It is in those cases where the auricular fibrillation depends upon a toxic, and not upon a degenerative condition, of the myocardium, that recovery occurs.

In conclusion, one would once more emphasize the facts that in the case of the pneumomechanical heart the operative risk is comparatively slight, although the patient may be in desperate straits from obstructive dyspnea because the heart, although exhausted, is not poisoned or degenerated. On the other hand, in the case of the thyrotoxic heart, the risk is comparatively high, because the heart is not only exhausted but poisoned and degenerated as well. Furthermore, as regards postoperative recovery, in the former cases it is rapid and frequently incomplete, in the latter, always slow and frequently incomplete.

Finally, one might mention that the most complex and difficult of all cardiac cases to assess in connection with goitre, are those in which the subject early in life manifested some condition such as rheumatic fever, resulting in definite cardiac damage. Such a subject later in life develops a cystic adenoma with marked thyroid enlargement, when pneumomechanical signs are superimposed on the old rheumatic heart. Later the goitre may become toxic when thyrotoxic signs are further superimposed. In such cases as these it is almost impossible to determine how much of the damage is rheumatic and how much thyroid in origin.

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The Endocrine Glands and Immunity

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Notwithstanding the marked advances made since Pasteur by such men as Chauveau, Metchnikoff, Behring, Pfeiffer, and Bordet—to mention only the foremost—the exact nature of the phenomena of immunity has remained obscure. Again, since Claude Bernard and Brown-Séquard, another mysterious phenomenon, that of the internal secretions, has awakened interest among scientific men and become the subject of most fruitful investigations. Correlation between these two lines of research must necessarily at some time have taken place, and was not long delayed, as the event proved.

Even in Brown-Séquard's time it was generally conceived that the internal secretions had for their purpose to neutralize certain toxic substances normally produced in the tissues. But this conception was soon left far behind and attempts were made to attach to the ductless glands likewise a defensive function against substances foreign to the organism. The ductless glands thus became the essential supports of Grasset's *antixenism,* of Sajous's original and ingenious theory, and of various hypotheses.

It is now an opportune time to review this question from the point of view of recent data, and to ascertain what conclusions experimental work supports and what new lines of research are opened by it to investigators.

Such is the purpose of the present article. I have already published elsewhere a very extensive study of the subject; this will make it unnecessary to append hereto tedious bibliography to which, however, the reader may easily refer if he so desires (1).

The first fact to arrest the attention of observers is the frequency of involvement of the ductless glands during infections and intoxications. The thyroid, adrenals, hypophysis, ovary, and testicle are often diseased in the course of a great variety of toxic infectious states, such as tuberculosis, syphilis, typhoid fever, influenza, scarlet fever, smallpox, diphtheria, mumps, acute rheumatism, infections of the digestive tract or lungs, streptococcic infections, cholera, tetanus, meningococcic disorders, malaria, and other infections; in the presence of exogenous

intoxications by lead, mercury, alcohol, chloroform, and other substances, and in autointoxications, including in particular those due to pregnancy.

Roger and Garnier, Torri, and Crispino, in connection with the thyroid; Charrin and Langlois, Oppenheim and Loeper, and Polak and Mulon, in connection with the adrenals; Garnier and Thaon, and Rénon and Delille, in connection with the hypophysis, and Ancel and Bouin, in connection with the sex glands, have been the authors of investigations along these lines. Some merely recorded the observed facts, while others interpreted these facts as evidences of the antitoxic rôle of the ductless glands. As a matter of fact, such interpretations were not wholly justified by the observations made.

Many different organs may be involved, indeed, in a wide variety of toxic infectious states; yet this fact has never been considered ground for ascribing an antitoxic function to these organs. Furthermore, the pathological lesions most often found are destructive lesions such as hemorrhage, suppuration, degeneration, and fibrosis, and it is hard to see how finding a destructive lesion in an organ constitutes proof of an antitoxic function on the part of that organ. In some instances, however, experimenters have actually found hypertrophic conditions or evidences of increased glandular activity which were more in keeping with their interpretations. In the case of the adrenals, in particular, Langlois and Charrin, and Mulon and Porak have reported many instances of this kind. That the glandular hypertrophy observed leads to overproduction of a normal secretion remains, however, to be demonstrated. Garnier found in cases of experimental hypertrophy of the thyroid that the colloid material, while present in enormous excess, no longer had the usual staining reactions. Again, why should not the possibility be recognized that this glandular hypertrophy is merely the expression of a local defensive process (protection of the gland itself), as was suggested by Voinov when he analyzed the experiments of Ancel and Bouin on the testicles?

To get around this difficulty some observers have sought to determine the amount of secretory products in the gland itself. Thus, Giraud, and Labbé and Vitry have made determinations of the amount of iodine in the thyroid, and Lucksch, Tedeschi, Rossi, and others, of the amount of adrenalin in the adrenals. In this connection it would be necessary to know, in the first place, whether the secretion is always of the same kind; in the case of the adrenals in particular, it is well known that in addition to adrenalin, these glands secrete lipoids, the rôle of which in infectious diseases has been shown by the researches of Chauffard. Further, it has been demonstrated that one cannot form an estimate of the secretion of the adrenals on the basis of the reserve of adrenalin contained in these glands (Stewart and Rogoff, Gibson, Kuriyama).

Other authors have thought they were getting nearer to the truth by studying the output of glandular secretions into the efferent veins. Tchebocsaroff, in particular, asserts that he noted a reduction of the adrenalin in the blood of the adrenal veins from the second to the sixth day of experimental diphtheria. Here again, however, it is hard to form an exact idea, as little is known about the actual secretions of the adrenal and the unity of such secretions has not been demonstrated.

Yet it has appeared feasible to certain investigators to recognize such glandular hypersecretion in the blood stream, either by methods demonstrating directly the secretory excess (dialysis method) or by procedures showing the resistance of the organism at large to the excessive functioning (complement fixation method). The Abderhalden reaction was utilized in this connection. Dietrich's reaction is the reaction of complement fixation as applied to thyroid hypersecretion. It is asserted to be positive in the presence of fever. Both of these reactions when actually applied, however, yielded most conflicting and unexpected results, and must be rejected as unsuitable, at least in the form in which they are now in use.

A few observers then thought that if the ductless glands had an antitoxic function, extracts of these glands might neutralize toxines *in vitro* and possess bacteriolytic properties. Thus, it was shown that the vitality of germs was reduced when they were grown on such glandular media as thymus (Brieger, Kitasato and Wassermann), thyroid, suprarenal, testicle and ovary (Parhon and Savini). Turri has recently shown, however, that all tissue extracts possess more or less bacteriolytic activity on account of the ferments common to all cellular elements, and that the action of fat solvents and probably also that of substances favoring the saturation of fatty acids enhances the solubility of these ferments in saline solution, and that consequently the bacteriolytic property referred to is supported by fatty substances or lipoids —a view already expressed by Landsteiner and Ehrlich. It has also been shown that these gland extracts are able to neutralize bacterial toxines (Remedi, A. Marie) or other toxic substances (Langlois and Charrin, Abelous, and Oppenheim, in the case of the adrenals). It seems possible, however, that this neutralizing action may always be due to these lipoids or fats, and one should bear in mind the splendid experiments carried out in Delezenne's laboratory on the neutralization of snake venoms by lipoids.

It has also seemed justifiable to think that these gland extracts might possess an antitoxic action, or at least one of stimulation of the processes of defence, *in vivo*. Thus, it was observed that ingestion of thyroid extract was capable of increasing the amount of complement in the blood serum (Miss Fassin, Bruns), phagocytic power (Marbé), the opsonic index (Marbé, Stépanoff), hemolytic power (Yustchenko, Koopman), leucocytosis (Donzello and Venuti), and the property of agglutination (Borchardt). Administration of adrenalin has been held to increase the agglutinating power (Borchardt) and to enhance the tuberculin skin test (Bouveyron). Pituitary extract has been held to increase the complemental power of the serum (Donzello and Venuti). Yet, Farrant admits that injection of extracts of thyroid colloid fails to save guineapigs poisoned with diphtheria toxin. Parhon and Mme. Parhon observed that fowls rendered hyperthyroid were less resistant to cholera than normal fowls. Strubell and Michligk found the opsonic index lowered in guineapigs to which thyroid was administered. Couland has observed that thyroid opotherapy exerts an unfavorable influence on the course of tuberculous

disease and inhibits the tuberculin skin test. Bijlisma, in contradiction to Borchardt, did not find the agglutinating power affected after administration of adrenalin. Conflicting results are not the only objectionable feature of the experiments described above. The products of internal secretion not having as yet been isolated, the gland extracts used contain, in addition, proteins and lipoids, the action of which may itself suffice to account for the experimental results obtained. Thus, it is known that proteins alone may increase the complement of the serum (Bordet, Nolf) and likewise the agglutinins (Kirstein); lipoids are capable of yielding like results, as mentioned in a recent contribution by Linossier.

Experiments consisting of the removal of the ductless glands have been more illuminating. After removal of the thyroid, there have been noted reduction of the complement content of the serum (Miss Fassin, Muller, Marbé), of the opsonic index (Palazzo, Marbé), of the hemolytic property of the serum (Carlson), of the production of diphtheria antitoxin (Houssay), and of the resisting powers to tuberculous infection (Miss Bernard), to a great variety of poisons, such as sodium arsenite, mercury bichloride (Jeandelize and Perrin), caffeine (Lindeman), and cocaine (Sanchis Banus), as well as to uremic intoxication (Rémond and Minvielle), etc. After adrenalectomy the experimental subjects have shown less resistance to various toxics, such as neurine (Albanese) and atropine (Langlois, Abelous, Boinet), and to various infections or intoxications (Langlois and Charrin, Oppenheim and Loeper, Camus and Porak, J. T. Lewis), including that by diphtheria toxin (A. Marie). Castration is asserted to cause a lowering of the opsonic activity of the blood and to reduce the power of defence against infection (Candro and Torelli, Marchesi, Metchnikoff).

In contrast with these findings, however, several observers have noticed that thyroidectomy not only did not reduce the defensive powers, as reported by Bianchi Manotti already in 1895 and later by Diez and Lerda, Frouin, Fjelstadt, Launoy and Bruhl, Hektoen and Curtis, and others, but could even act favorably on the phenomena of immunity (Garnier, Marañon, Garibaldi, J. Clevers). As regards the adrenals, Giusti, Bijlisma, and others do not believe that removal of these glands is capable of exerting an unfavorable effect on the processes of immunity.

These contradictions are readily accounted for if one will recollect the difficulties attending the performance of such operations—operative shock, injury to adjacent organs, and others—as well as the untoward consequences resulting from such removal in animals owing to the disturbances of nutrition occasioned; as a result of this, the actual fact is that one is generally experimenting on moribund animals.

Thus, up to the present time, all the methods of study herein reviewed are inadequate to clear up the problem under discussion. There are two methods, however, which, in my estimation, might, if properly applied, throw some light on the subject, and are deserving of further trial.

The first of these comprises the experiments consisting of the intraglandular injection of toxic substances or of bacteria. The artificial circulation experiments already attempted by many observers in relation to the liver and by Roger in relation to the lungs with a view to demonstrating the inhibitory action of these organs on germs or poisons, might be applied to the other ductless glands. Few experiments of this kind have been carried out, and the occasional attempts known to the writer concerned only the thyroid gland. As a matter of fact, they yielded conflicting results. Franceschi found the mortality among the experimental animals increased when he introduced diphtheria toxin, not in the general circulation, but in the thyroid artery. Remedi, on the other hand, found that injections of killed cultures of anthrax, diphtheria, or tetanus germs were less virulent in the thyroid than under the skin. Between these two extremes, the experiments of Diez and Lerda, and especially of Bassinger, failed to reveal any difference between the results following injection of toxic substances into the thyroid and those following subcutaneous injection.

These investigations should be repeated. Injections into the parenchyma should be discarded as causing too much trauma. The toxic material should be introduced slowly and in an aseptic manner preferably in isotonic solution through the afferent artery to the organ under investigation. It will then be necessary to ascertain:

1. Whether the lethal toxic dose injected into the afferent artery is greater than the lethal toxic dose injected subcutaneously in control animals.

2. The changes relating to immunity reactions: Complement, agglutinins, precipitins, etc.

3. The content of toxic products in the blood of the efferent vein.

4. The histological and histochemical reactions awakened in the gland by the product under investigation.

The second method does not seem to have been used as yet, at least not to the writer's knowledge. Nevertheless, it would appear to be of marked interest. If it is actually true that the endocrine glands take part in the production of immunity, or more precisely, of the antibodies associated with such immunity, the blood contained in these glands, or at least the blood issuing from them, should contain more of the antibodies than blood from other portions of the body. In consequence, it would be appropriate to ascertain exactly the distribution of the antibodies in the blood, including particularly the relative amount in the blood of the efferent veins of the ductless glands.

The foregoing represents the present state of the question which I have taken the liberty of discussing in this paper. Many experiments have been performed; yet very few of them are really conclusive and immune to all criticism. Much effort, laudable but disconnected, has been expended. No comprehensive work on the subject has been conducted experimentally. The purpose should now be, after having subjected all that has been done so far to due criticism, to formulate a new plan of work. The brief study herein presented does not pretend to be anything more than an introduction to this work. If it shall merely lead a few investigators to experiment further on the question its purpose will have been amply fulfilled.

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Analysis of Fifty-two Goitre Cases, with Discussion of Treatment Employed in Different Types*

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This paper is based on the observation of fifty-two goitre cases treated in the Outpatient Department of the New York Post-Graduate Medical School and Hospital during the past two and a half years, ending with 1922.

First, I will give the classification that has been employed in this clinic.[1]

1. Goitres with approximately normal secretory activity or hypothyroidism. a. Simple and endemic goitre. Pathological gland with secretory activity diminished. b. Goitres with adenoma. Pathological gland with secretory activity diminished or normal. c. Colloid goitre. Pathological gland with secretory activity diminished.

2. Goitres with increased secretory activity. a. Adolescent goitre. Physiological gland with slightly increased secretory overfunction. b. Goitre with adenoma. Pathological gland with overfunction. c. Goitre of Graves's disease. Pathological gland with overfunction of dysfunction.

3. Goitres with degeneration. a. Malignant goitres. Pathological gland with variable secretory activity. b. Goitres with cystic, hemorrhagic, fibroid or hyaline degeneration. Pathological gland with diminished secretory activity.

I.—GOITRES WITH APPROXIMATELY NORMAL SECRETORY ACTIVITY OR WITH HYPOTHYROIDISM—ADOLESCENT GOITRE.

This series included sixteen adolescent goitres. The average age was 15.2 years, the oldest patient being nineteen, the youngest twelve years old. All were females. The average duration of the disease was 2.95 years; the longest duration eleven years; the shortest four weeks. Basal metabolism determinations were done on all of these cases, with twenty-seven per cent. showing a normal reading, thirty-three per cent. showing decreased metabolism, and forty per cent. increased metabolism. The average decrease was minus 10.5 per cent.; the average increase, plus eleven per cent.

Of these cases one was referred for admission but did not enter the hospital. The patient, H. H., aged nineteen, first noticed swelling eleven years ago. Did not improve with thyroid extract, one grain t. i. d. The basal metabolism was plus six at the first determination. Two months later it was minus one. After being under observation for five months and continuing to enlarge, the patient was referred for admission due to pressure symptoms.

This type of goitre is seen in young women at or before the age of puberty. These patients give a history of the mother having had thyroid trouble. They are usually among the poorer classes who have begun work early in life and are poorly nourished, anemic, and have foci of infection—tonsils, teeth or sinuses. The diagnosis of this condition is usually easy. There is a symmetrical enlargement of the thyroid in a girl at or about the age of puberty, which is rather soft and does not give a definite thrill on palpation. The patients also give a history of the growth enlarging during the menstrual periods.

The treatment of this condition is medical, beginning with the eradication of any focus of infection, correcting faulty hygiene, advising open air life as much as possible and the keeping of regular hours. Metabolism readings should be ordered in all cases when first seen. It is an iodine deficiency disease and iodine has to be supplied. This may be given in the form of thyroid extract, one grain, ovarian substance, three grains, and pancreatic substance, two grains. If the patients do not improve on this, sodium iodide, five grains, or syrup of ferric iodide, five m. three times daily, may be substituted. This must be kept up for a number of months, and the patient must return at stated intervals of from two to four weeks for observation. Some patients will take one form of iodine well, while others do better on a different medication. This can be determined only by observation and the prescription changed as needed.

GOITRES OF ADENOMA.

There were eight patients in this series. Four of these were recommended for admission and three went into the hospital. The usual adenectomy with partial thyroidectomy was performed in each case, leaving from one fifth to one quarter of thyroid substance *in situ*. These patients averaged 30.3 years of age, the eldest being forty-three, the youngest eighteen years old. All were females. The average duration of the disease was 5.5 years.

Thyroid adenomata are of two types: 1, fetal; 2, diffuse colloid. The former constitutes the greater number of cases. When arising from fetal adenoma, the growth is usually situated in one of the lateral lobes, but it may be in the isthmus of the gland. It gives an asymmetrical appearance, and on examination the consistency is found to be firmer than the surrounding substance of the gland. These patients first notice the swelling at about twenty-two to twenty-three years of age, and in the early years it does not give any discomfort. The patients usually seek medical aid for cosmetic reasons or because of pressure symptoms in the beginning of the disease.

Colloid adenoma gives a more diffuse enlargement of the thyroid gland. It is symmetrical and softer.

The treatment of adenomata in patients under thirty years of age without increased basal metabolism or local pressure symptoms should be continuous observation with determination of the metabolism readings every year. If for cosmetic purposes the patients demand removal before thirty years of age, the wish may be complied with. The thyroid gland is essential to the development of the body, however, and if possible should be left until after thirty years of age before performing a thyroidectomy.

*From the Goitre Clinic of Dr. Charles Gordon Heyd at the New York Post-Graduate Medical School and Hospital.

[1]Personal communication from Dr. Charles Gordon Heyd.

The cases advised for admission here were either for pressure symptoms or the patients were past thirty years of age and at an age when they began to show toxic symptoms. A high percentage of adenomata take on toxic changes between the ages of thirty-five and thirty-seven, and if an operation is performed before these changes have occurred it prevents permanent damage to the cardiovascular system, the liver and the nervous system. After operation, these cases should be treated with sodium iodide to avoid any iodide deficiency.

COLLOID GOITRE.

This group includes three cases. The average age was twenty-seven years, the oldest being thirty-five and the youngest nineteen years of age. Two cases were admitted to the hospital, one for diffuse enlargement in a woman thirty-five years of age, the other in a girl twenty years with pressure symptoms. Partial thyroidectomy was done on each of these cases.

Colloid goitre resembles somewhat an arrested stage of mild Graves's disease, but the exciting causes cease to operate after hyperplasia; the gland undergoes involution toward recovery. When involution is complete, the gland becomes a colloid goitre. This type of disease is met with in young women between the ages of eighteen and twenty-five. There is a symmetrical enlargement of the gland, of firm consistency, which may become enlarged at the menstrual period. It is usually seen in obese patients showing hypothyroidism. They occasionally give a picture somewhat similar to a beginning or mild Graves's disease, and have goitre, tremor, palpitation and nervousness but no exophthalmos. These cases are sometimes difficult to differentiate from the early stages of Graves's disease, and the basal metabolism is the only way of making the differentiation. In this condition the metabolism is usually minus or approximately normal.

The treatment is medical, and should consist of sodium iodide, five grains, or syrup of ferric iodide, five m. three times daily. The patients should be kept under close observation. They may be improved by this form of treatment if under twenty-five years of age, but if over twenty-five they will not improve. If there is a marked degree of enlargement, causing pressure symptoms, surgery should be advised. If the patient is over twenty-five years of age, and demands removal for cosmetic effects a partial thyroidectomy may be performed and the operation should be followed by some form of iodine treatment.

2.—GOITRES WITH INCREASED SECRETORY ACTIVITY.

Adenomata.—This series includes fourteen cases. The average age of the patients was thirty-five years, the oldest being forty-seven and the youngest nineteen years of age. All were females. The average duration of the disease was 5.7 years. Metabolism readings showed plus twenty-nine for the average; the lowest, plus nineteen, and the highest plus forty-nine. Partial thyroidectomy was performed on twelve of these cases. The other two did not enter the hospital after being so advised. The mortality was zero. These cases averaged eleven days in the hospital. Followup shows them free from symptoms at the present writing.

The clinical picture of this condition makes it easy to differentiate from Graves's disease. Usually there is a history of swelling in the neck for a number of years before consulting a doctor. The patients begin getting nervous from two to three years before seeking medical advice and come in complaining of palpitation and tremor.

The treatment of this condition is surgical as soon as diagnosed. After a number of years of continuous thyroid intoxication there is permanent damage to the circulatory system, the liver and the nervous system.

A recent report from the Mayo Clinic gives a mortality of .15 per cent. for 663 cases of simple adenomata following thyroidectomy; a mortality of 3.48 per cent. for adenomata with hyperthyroidism, in 201 cases; and a mortality of .96 per cent. in 523 cases of Graves's disease following partial thyroidectomy.

EXOPHTHALMIC GOITRE OR GRAVES'S DISEASE.

This series included ten cases, all of which were admitted for observation and operation. The average age of patients was thirty-two: the oldest being forty-six, the youngest twenty-one, with nine females and one male. The average duration of the disease was 1.6 years—the longest three years, the shortest one year. The metabolism averaged plus 45.5—highest, plus ninety, lowest, plus thirty. All these patients came to operation and the type of treatment varied with the metabolism findings. All were treated with either rest in bed or ligation before partial thyroidectomy was performed. Three cases, after rest in bed from seven to ten days, did not show signs of improvement, and they had bilateral ligation of the superior thyroids. One had thyroidectomy two months after ligation; one, one month after; and the third had a thyroidectomy after a two week interval before leaving the hospital. The remaining cases were treated by rest in bed, ice caps to heart and neck, luminal one grain every four hours, and forced fluids. These cases were considered safe surgical risks in view of the metabolism findings and the clinical pictures. The average period of rest in bed was 9.5 days—the longest fourteen days, the shortest seven days. The average stay in the hospital was 20.7 days—the longest thirty-two days, the shortest thirteen days. There was one death in this series.

CASE I.—Patient, M. Z., female, twenty-three years of age, had been nervous for two years. Operation for retroversion six months before entering hospital. She felt better for three months, then began going down hill very rapidly. Admitted to hospital on March 28, 1922. Metabolism reading, plus forty-five. On April 5, 1922, the metabolism was plus sixty; April 12th, plus forty, with patient much improved and the clinical picture favorable for operation. Thyroidectomy was performed, but the patient died of thyrotoxicosis thirty hours later. The pathological report was "Graves's disease, severe type."

CASE II.—Patient, S. S., twenty-nine years of age. On June 2, 1921, the metabolism reading was plus ninety; June 6th, plus seventy-four; June 16th, sixty-five, with clinical picture favorable for operation after eight days rest in bed. Bilateral resec-

tion was done, and the patient made an uneventful recovery, leaving the hospital twenty days after admission, with a metabolism of plus thirty.

These cases are cited to show that one may be misled by the metabolism readings if one fails to take the clinical picture and history into consideration. The history of Graves's disease is characteristic and it is usually one of the easiest forms of goitre to diagnose. The patients usually give a definite date to the onset of their trouble and attribute it to shock or some unpleasant experience. They present a picture of tremor, tachycardia, goitre and usually exophthalmos, with loss of weight. The treatment for the two forms of goitre is radically different, and the basal metabolism will easily differentiate Graves's disease from colloid goitre.

Graves's disease runs in cycles, with periods of remission in the severity of the toxicity. The first toxic crisis comes from nine to twelve months after the onset of the disease. The patients then have a period of improvement, and say they feel much better. This period of remission may last for from six months to a year, when there is a second toxic crisis, with increase in the severity of the toxicity, which lasts over varying lengths of time. Then there is a third crisis, and so on. If the patients do not die during these later stages, Nature tends to correct the hyperthyroidism by fibrous tissue replacement, and the patient becomes a chronic invalid from permanent damage to the cardiovascular system, the liver and the nervous system, with bizarre signs of hyperthyroidism.

In selecting the proper time to operate and the type of operation to be performed, it is important to understand these cycles of toxicity. A patient with a plus sixty metabolism who has passed through his crisis is a much better surgical risk than one with a plus forty metabolism and at the beginning of a crisis of the disease.

The treatment of this condition is surgical as soon as it is diagnosed, and the type of the operation depends on the clinical picture, the history, and the basal metabolism. The basal metabolism should be determined in all these cases when first seen, so as to have an index as to the severity of the toxicity with which one is dealing. A plus forty metabolism during the crisis gives a serious picture when the case does not respond with rest in bed and sedatives; and ligation of the superior thyroids should be performed and the thyroidectomy done at a later date. But if the patient is in such a toxic state that ligation is not deemed safe, she had better be carried over the crisis by absolute rest, sedatives and ice caps—and ligation of the superior thyroids done at a later period. The period of time which elapses between the ligation of the superior thyroids and the partial thyroidectomy will vary in the individual cases. Some cases may be operated upon within two weeks, while others will need two to three months' rest, but rarely longer. The maximum improvement is obtained at the end of ten to twelve weeks. The basal metabolism determinations will be the guide in this. If the metabolism is thirty to forty and declining, thyroidectomy is considered safe. Patients who have passed their crisis and have a metabolism of plus sixty or seventy, which drops rapidly with from seven to ten days' rest in bed to a plus forty or forty-five, are considered safe surgical risks for primary thyroidectomy, without preliminary ligation of the superior thyroids.

The use of the x ray and radium therapy and injections of boiling water into the thyroid gland have not given satisfactory results. Radium has been used since 1905 in the treatment of exophthalmic goitre, but the dose in this condition is still undetermined. X ray therapy has not as yet proved satisfactory. The dose has not been determined and it seems as if radium can be more easily regulated than the x ray. The one field in which they seem to be useful is in the treatment of hyperthyroidism of adolescent goitre in which there is a marked enlargement of the thymus gland. Injections of boiling water have proved painful and are not employed extensively because of this. It is a question as to whether there will be any permanent result from this treatment.

3.—GOITRES WITH DEGENERATION.

Malignancies.—This type of goitre is usually diagnosed without great difficulty, except in the early stages. The type of malignancy is the feature which holds our interest. This can be settled only by a biopsy. Crile states that ninety-five per cent. of malignancies of the thyroid are carcinoma; less than five per cent. sarcoma.

If there is a history of goitre for a number of years and it then takes on a rapid growth, with nodosities and infiltration, one is safe in assuming that it is carcinoma.

In this series we had two malignancies, but no biopsy was done on either. In one case the gastrointestinal x ray series revealed coincident involvement of the stomach. The patient did not return, and a followup disclosed the fact that this patient had died two months after coming to the clinic. The second case is under treatment at the present time, with x ray therapy. The patient has not cooperated and frequently fails to return for treatment until a followup letter is sent. In spite of this, he has gained ten pounds, the tumor has diminished by one third in size, and his general health has improved. He failed to have treatment for three months, and lost eight pounds in weight. At the present time he is again under treatment, one year following the onset of the trouble.

The average age of these patients was sixty-three years, the oldest being sixty-eight and the youngest fifty-eight years old—one female, one male. Metabolism readings were plus twenty, in the one case; in the other, the metabolism was not determined. The duration of the symptoms in the one case was fourteen years; in the other, one year.

Treatment.—These cases are usually far advanced when seen by the surgeon, and in a large percentage of them a thyroidectomy cannot be done. If the growth has not broken through the capsule, a complete thyroidectomy should be performed. In the inoperable cases, x ray or radium should be used. Such therapy should also be used postoperatively.

The mediastinum is often involved, and as x ray therapy has a deeper penetrative effect than radium it seems preferable to the latter in this condition.

CONCLUSIONS.

1. This series showed twenty-eight thyroidectomies, with one death, or a mortality of 3.5 per cent. A followup of this series of cases at the present

writing has failed to reveal any recurrence of toxic symptoms in those cases with thyrotoxicosis.

2. Adolescent goitre is a condition which should be treated medically unless there are pressure symptoms.

3. Colloid goitre should be treated medically with iodine if the patients are under twenty-five years of age. Past that age medical aid is of no value. Surgery may be employed for pressure symptoms or for cosmetic results.

4. Adenomata should be kept under observation until past thirty years of age, with yearly determinations of the basal metabolism, unless there are local pressure symptoms or hyperthyroidism. Past thirty years of age they are usually better treated by surgical measures.

5. Exophthalmic goitre or Graves's disease is a surgical condition and the type of treatment will vary with the metabolism determinations, the clinical picture, and the history.

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Some Remarks on Hereditary Phenomena with Special Reference to Scrofula and Its Relationships to Endocrinology

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In this article I desire to consider the transmission of diseases from parents to children, as well as the forms of disease which have arisen in the course of centuries. In the first place, my experiences at health resorts will serve as a basis for these observations, as in such places patients congregate who are afflicted with hereditary diseases.

In the health resort Gleichenberg, I observed disease pictures, which are typical of patients from the eastern countries (formerly Galicia), who are groups of people who have lived for centuries under the influence of miserable economic conditions. Their diseases affected chiefly the upper respiratory passages; chronic rhinitides with their sequelæ, such as polyposis of the nose; chronic bronchitides; pleuritides; diseases of the bronchial glands, and tuberculosis of the gastrointestinal tract, associated with tabes mesenterica in individual cases. The severest forms of tuberculosis occurred less frequently. Selection favored the restless migratory life of the worries and crowded conditions of living, which destroy health, had contributed to destroy the elements showing a weak vitality.

The various diseases mentioned above were inherited in the majority of cases, as the histories showed, from the grandparents and parents, and in many cases only a transient strengthening and restitution could be achieved, which is explainable by the acquired weakened constitution and the predisposition of the delicate mucous membranes of the upper air passages. Subsequent phenomena frequently attacked the other systems of organs. Inasmuch as tuberculosis is present mostly in the less accentuated grades, only because of the previously mentioned reasons, it has, in spite of the malnutrition of the majority of these Galicians, no longer been able to reach the more severe grades in general. The tenacity of organs inured to tuberculosis has offered resistance to the virus. The toxin has become anchored at the site of the absorption of the injurious substances, especially in the lymph nodes and underneath the skin, where it has become arrested and attached, to remain subsequently as a scrofulous structure. The scrofulous habitus persisted even in those patients who were in better conditions later. *In natura non est saltus* also applies here. A disease picture which required centuries for its development, cannot disappear so rapidly, but persists.

From this point of view the following forms of scrofula may be mentioned: external and internal, visible or manifest, and invisible. The following case serves as an illustration of the latter variety: A hereditarily scrofulous child, in spite of the most favorable conditions of life, becomes afflicted with a phlyctenular, that is, scrofulous conjunctivitis after several iodine baths, especially in damp weather.

Scrofula may also be classified as erethistic and torpid. The latter form occurs mostly in persistently undernourished individuals and the former occurs in persons in comfortable circumstances and displays a more latent character. With malnutrition the erethistic form of scrofula may change into the torpid form.

HEREDITARY NERVOUS DISEASES.

Before continuing the pathogensis of scrofula, the following observations on hereditary nervous affections showing a similar fate are worthy of mention. Groups of individuals living in seclusion, like the Galicians, and people living in Bosnia and a portion of the people living in the mountainous regions of Roumania, have, according to all appearances, repeatedly become infected with syphilis. Inasmuch as this disease runs an insidious and painless course in the first stage, it has been neglected frequently. The virus has persisted through centuries and became associated with typical degenerative forms, especially in the nervous system, such as tabes dorsalis, multiple sclerosis, spastic paralysis, Friedreich's disease, syringomyelia, and central asthmatic diseases.

On returning to the subject of scrofula, the fact must be emphasized that this, in association with the hereditary nervous diseases and particularly in their sequelæ, frequently depends upon a mixture of two stimulating substances and is the result of the influence of tuberculosis and of syphilis. The mixed product may be the result of the superinfection of tuberculosis upon a weakened luetic habitus. During the latter years of undernutrition, it was just among the descendants of the individuals with hereditary disease previously mentioned, namely, those afflicted with chronic respiratory and hereditary syphilis,

that a marked incidence of scrofulous individuals was noted, which expressed itself in stillbirths, premature births, retarded development of the bones and teeth, many forms of bone involvement, a deficient blood picture and deficient development of the brain and spinal cord with an impossibility of restitution. Two familial pictures may be mentioned as examples: 1. The grandmother showed scrofulous lymph nodes and a trigeminal neuralgia of the most severe form; the daughter and the grandchild was afflicted with a nervous urticaria. 2. The grandfather was afflicted with lupus of the pharyngeal mucosa, the son showed a tuberculous hemoptysis and the grandchildren were afflicted with scrofula and splenomegaly.

NATURE OF SCROFULA.

Further evidence that scrofula is a mixed form of tuberculosis and syphilis is furnished by the gummata of the Bosnians, which frequently resemble scrofula. As tuberculosis occurs very often in this weakened population, a mixture with the tuberculous virus is very likely. The more marked or weaker influence of one of these two factors is apparently decisive for the macroscopic appearance. These conclusions become demonstrative and clear when one sees the microscopic picture of these granulomatous structures. An absolutely uniform structure for gumma and scrofulous tumors is never demonstrable.

The purpose of this paper is not the differentiation between the more accurate pathological anatomy or the specific syphilitic associated symptoms. I need only to call attention to several forms of diseases, which may appear in scrofulous individuals and which lead to the conclusion that the tuberculous virus is also effective. Just as chronic osseous and articular phenomena must be thought of in iritis and conjunctivitis, just so must syphilis or a mixed form of tuberculosis and scrofula be thought of in certain gastrointestinal phenomena. The projection of secondary phenomena upon this theory alone is drawn insufficiently and too closely. All secondary symptoms, both of the nervous system and of the other groups of organs, must be tested repeatedly to determine whether and to what extent the Koch bacillus is an associated factor of disease, as wherever the organism is so seriously injured, as by the luetic toxin, this bacillus finds its most favorable medium.

HYGIENIC CONDITIONS.

What has been said of the Bosnians or Galicians in regard to the heredity of the scrofulous diseases, naturally applies also to all other populations, who live and suffer under similar unhygienic conditions. In some of these inbreeding has had a particularly injurious effect. The secondary symptoms of this mixed infection showed various manifestations according to the more or less favorable or unfavorable mode of life of these hereditarily infected elements. If, for example, we consider the gypsies, who are thus affected, we find that those who have settled down and entered upon a better mode of life, have shown less stigmata of hereditary involvement than their nomadic, unsettled fellows.

In regard to the fatality among isolated individuals, this occurs most readily in those in whom the endocrine organs are diseased. From this point on the hereditary affection seems to be attended by its most serious and worst sequelæ; namely, these organs stand guard over the metabolism of the human body; they act as regulators and hold out the longest.

PRELIMINARY TRTEATMENT.

Inasmuch as the symptomatology of the disease is still in its infancy, the therapeutic test must be instituted as soon as possible; no time is to be lost in treatment, if the organism is to be restored and supported. The preliminary stage of the treatment in the vast majority of scrofulous individuals, that is, mostly in tuberculous, luetic, run down individuals, especially when the disease is hereditary, must lie in organotherapeutic treatment. Inasmuch as the individual immunosecretory organs down to the most minute changes are not demonstrable at the time, but nevertheless their associated action is definite, the multiglandular preparations must be used. After this preliminary treatment, the combined salvarsan tuberculin treatment, particularly iodine (Mirion) tuberculin treatment is to be preferred.

I would particularly emphasize the fact that the ontogenetic relationship between the degenerative nervous diseases and the luetic scrofulous diseases is also influenced by combined tuberculin treatment. Consequently, in the luetic degenerative forms of tabes an admixture upon a weakened base, which will influence the tuberculosis, must be used. The therapeutic effect, to a certain extent, proves the ontogenetic relationship of these disease groups and both of these groups are concomitant.

THERAPY.

These diseases are favorably influenced by iodine therapy and iodine preparations, either in the form of iodine baths, sea water containing iodine, or iodine drinking waters in the form of mineral waters, iodized cod liver oil, or other iodine preparations. In regard to the food of patients, who are afflicted with such diseases, it might be said that a diet containing an abundance of vitamines is to be recommended for the rest of their lives, including fresh meat, fresh fruits, lemons and oranges; sterile fluids, as, for example, grape juice, have a good effect. All of those foods which are rich in vitamines also favor the remineralization of the organism and with it also the endocrine organs.

In the interest of a healthy and strong posterity, namely, from a eugenic viewpoint, all individuals afflicted by a hereditary taint, with multiple swellings of the lymph nodes, be they luetic, tuberculous, or scrofulous, should be eliminated from posterity. If a general lymphadenitis is present (special attention being given to the palpation of the cubital lymph nodes) then the entire organism and with it the motor of all life—the endocrine organic system—is diseased. If, in this stage of hereditary diseases, reliance is placed upon the Wassermann reaction, then latent diseases, which often lie dormant for one to two generations, will again flare up in the third and fourth generations. The preparatory preliminary treatment with multiglandular preparations, the most important constitutents of which are the synthetic indifferent combinations of iodine, must not be delayed. It may be assumed that organotherapy will have its greatest successes in the field of hereditary diseases.

11 Wienerstrasse.

The Anxiety State and Endocrine Disturbance

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It is inevitable that an investigator in examining any subject should approach it along the path with which he is most familiar, and one of the dangers against which medical practitioners have to guard themselves in this present day of specialization in medicine is that of seeing a patient from one point of view only.

It is essential that every specialist who hears the symptoms and observes the signs in any patient should interpret them from his own point of view, but endocrinology appears to be in danger of becoming too isolated, a phase through which all specializations in medicine have passed, and it is important for the healthy development of the subject that it should retain a width of outlook within the limits of its sphere, in order that it may be successfully linked up with all that is best in medicine. More especially must any separation of this science from the science of psychology be guarded against.

The two subjects appear to be so closely linked together that it is probably just as unwise for an endocrinologist to attempt to treat his patient without a knowledge of psychology, as it undoubtedly is for a psychologist to attempt to treat psychological disease without studying endocrinology.

Many of the cases which are sent to the psychologist for treatment and which appear at first sight to be essentially psychological in character, require some treatment to assist the glands of internal secretions in their efforts to restore function and balance in the organism, but this treatment alone would fail if psychological means were not employed at the same time. In many of these cases it is a question of interest to decide from what point the disturbance starts, and, speaking as a psychologist, I should say that in the greatest number it is a psychological disturbance which originates the illness. It is true that in greater or less degree, in every case of anxiety neurosis and of socalled psychasthenia, as well as most of the psychoses, the patients suffer from disturbances of the endocrines.

The conversion hysterias which form perhaps half of all the cases requiring psychological treatment do not seem to be affected so profoundly, because they go through the changes belonging to the emotions that they feel without any permanent disturbance remaining, owing to the fact that their emotions are readily shown and that between the demonstrations of their illness, the mind is not disturbed. It is only where there is control or repression of the actions to which the emotional reaction in the mind gives rise, that serious or permanent disturbance of the endocrine balance occurs. Perhaps it would be wise to exclude from this generalization the type of case in which the emotional reaction is readily shown by the patient, but where the same emotional disturbance occurs repeatedly, as for example, in the man who went through intense fear during the war, which he was quite unable to hide, but who was compelled to return again and again to the trenches and go through the experience afresh. Even in such a case it seems likely that it was the anticipation of the terror which caused the endocrine disturbance rather than the actual emotional state itself.

To return to the statement that those individuals in whom emotion is readily shown do not suffer from permanent disturbance of their endocrine balance, possibly the best evidence in proof of this can be obtained by the use of the socalled psychogalvanometric reaction. Briefly stated, this means that if you pass a constant electrical current through the human body, the resistance of the body to the current is lowered during emotion, and as this phenomenon seems to be a part of the changes in the body resulting from emotional states, it can be taken as a measure of the degree to which all the other emotional changes occur. By using this reaction it will be found that mankind may be divided into two classes: The emotional and the controlled.

In the type of patient who readily shows emotion and in conversion hysteria, little or no change in the resistance to the current is observed, but in the controlled types, especially in those cases in which emotion is not recognized by the individual himself, there is a profound change in the resistance to the current during emotion, and, therefore, in all probability in all those parts of the body which react to the stimulus causing the emotion.

Thus what may be called direct or straightforward disturbances of the endocrines occur commonly in the anxiety state. The psychasthenic falls into the same category as the case of the soldier mentioned above, for it must be recognized that the psychasthenic would run away from his fear if he could, and is only restrained from doing so by the knowledge that if he did he would carry his fear with him.

In the anxiety state the presence of the emotional factor is only half recognized by the sufferer. He makes every effort to control the emotional disturbance, and in consequence becomes slowly poisoned, until clinically, the picture of the anxiety neurosis is established.

It is easy to bring forward further evidence to support the truth of what has just been stated. The emotional states were intended by Nature to serve a definite purpose and the addition to the circulating fluids of secretions from the glands of internal secretion was intended by Nature to assist in the activities that the emotions engendered.

It was intended further, in the primitive state, that the actions corresponding to these emotions should be carried out immediately and to their fullest extent, and where this occurs the whole cycle of changes is complete, the circulating substances which are intended to enable the body to live at its highest level are used up and when the activity is over the body returns to its normal state without any damage having occurred.

It is to the control of these emotions, or perhaps more correctly, to the control of the activities which should naturally follow these emotions, that serious disturbance of the endocrine balance is due.

From this point of view the most important emotions are three in number: 1. The emotion of fear belonging to the instinct of selfpreservation. 2. The emotion of sex belonging to the instinct of reproduction. 3. The emotion of anger belonging to the instinct of protection.

By this last, I mean the instinct given to us in order that we may protect our own property, whether that property is a stone axe, a hunting ground, a mate or an ideal. Nature intended that each of these emotions should be associated with violent physical activity: Fear with running away; sex with running or with a physical contest; anger, with violent physical conflict.

Grief is simply anger which has been foiled in its object and grievance, which is one of the most damaging emotional states from this point of view, an anger directed against a community or against a society or against a body of people, an anger which cannot be satisfied because it cannot result in direct physical action against any one individual.

Anxiety may be looked upon as a chronic form of fear; fear which is low in intensity but which is constantly present.

The fact that the emotion which is denied its physical outlet results in profound physical and mental disturbance is well illustrated in the case of two schoolboys who have had a violent quarrel. If they are permitted to fight it out they can shake hands and are good friends afterwards, but if this is prevented, friendship between them is impossible. We say that there is "bad blood between them," and this appears to be a true statement of the fact, their blood being charged with substances, poured into the circulation by Nature for the definite purpose of physical activity, which have not been utilized for that purpose.

We instinctively feel the need for violent activity whenever these emotions are aroused and in the better controlled classes of society, if the husband and wife quarrel, the wife usually gives way to tears, thereby using up her endocrines in an emotional outburst, while the husband kicks the dog down the front steps and goes for a five mile walk.

To sum up this part of the subject, we can say that when one of the primitive emotions of fear, sex or anger is aroused in the human mind, the person either reacts quite simply to the emotions and carries out the action it involves, in which case the reaction is complete, the internal secretions circulating in the blood stream are used up, the body returns to a satisfactory relaxation and the mind to complete placidity; or, where these emotions are controlled and the actions prevented from being carried out, damage to the organism results from the fact that oxidation and elimination of the circulating secretions is a slow and troublesome process.

It is fortunate that our social code permits the expression of grief and anger so that we are able to express anger more or less directly, and, without much divergence of the original idea, we can use this path for the expression of fear and sex as well. More especially is this possible because the physical reactions belonging to these three emotions are so closely allied to one another that they are readily confused by the individual, and the action path of anger can thus be utilized by all three.

To consider now more particularly the anxiety states. When repression occurs the approach of some emotional memory or some emotional wish to consciousness is prevented, but the stimulus which causes their approach to consciousness also arouses the physical change which belongs to them, and because this physical change occurs at the most primitive level of the nervous system, its appearance in the body cannot be checked.

In anxiety states these physical reactions of emotion are never followed by the complementary activity. They are observed by the patient to be the signs of some physical disease which belief, in its turn, engenders fear or anxiety and sets up a vicious circle of greater or less intensity in which anxiety and physical change alternate.

It is when such a circle has been in action for some time that some one gland, or set of glands, becomes raised to a higher level of activity than is normal, and it is then that the disease is recognized clinically as a disease of the internal secretions.

ANXIETY AND TOXEMIA.

It is now necessary to consider the part played by the emotional states in the production of endocrine unbalance when this is due to the absorption of toxins, and to do this it will be necessary to consider the physical changes produced by emotion in a little more detail.

The physical changes occurring in all three of these emotions are so much alike that fear can be taken as an example. If the factors which go to make up this bodily reaction are analyzed, we will be able to discover how each one is likely to affect the organism. To do this let us go back to the primitive reaction of fear, and see what occurs in the body. It is the intention of Nature that the animal shall run fast and far, and it is to that end that the whole activity is directed.

The presence of danger stimulates the lowest levels of the nervous system. There is an outpouring of secretions from the suprarenal glands, and in consequence from most of the other glands of internal secretion. The heart is stimulated to more rapid and stronger action in order that the skeletal muscles may be supplied with food, so that they may be swept clean, and their activity prolonged. Breathing becomes hurried, so that the need for the greater exchange of oxygen and carbon dioxide in the lungs may be met. There will be dilatation of the peripheral bloodvessels which causes flushing, and sweating will occur in order that the blood may be cooled.

These are the signs which, as we observed above, are recognized by the uninstructed patient as the signs of some physical disease, but there is a further series of phenomena of which the patient is for the most part ignorant, but which makes it possible for this other form of disturbance of the internal secretion balance to occur. The digestive functions are held in abeyance; the muscle walls of the intestines relax, except in the case of the intestinal sphincters, which show tonic contraction; the total effect of which is to produce intestinal stasis.

The intestinal stasis causes the contents of the gut to collect at certain well defined points; these are noticeably the stomach, the lower end of the ileum, the cecum, the transverse colon and the sigmoid

flexure. These contents are only partly digested because of the emotional inhibition of the digestive functions, and they give rise to a toxemia because of the absorption of the products of their incomplete chemical treatment.

Bacteria from the mouth or from the ingested food are readily able to pass the barrier of the stomach in which the lowered digestive functions are not able to destroy them, and the bacterial content of the gut is thereby increased. Furthermore, at the points in the intestine where stasis is most observable the bacteria have greater opportunity for activity, and the slow movement of the intestinal contents assists the absorption of the toxin which they produce. The weight of the overfilled intestine pulling upon the attachments at these points causes enteroptosis, and a chronic form of stasis. As a result of this the excretory organs are overloaded and the thyroid and suprarenal glands in their efforts to take part in this excretion become first of all enlarged and active and later on are found to be enlarged and exhausted.

Thus the anxiety state is able to take a large share in the setting up of conditions in which toxemia with all its effects on the glands of internal secretion is produced.

To take the thyroid, which is the most observable gland in the hierarchy, and observe the changes in it, we find that the hyperthyroidism and the subsequent hypothyroidism which result are not readily distinguishable in the two cases where they arise from 1, an anxiety state, in which bacterial toxemia is not a particularly strong feature, or 2, from bacterial toxemia, in which the anxiety state is not noticeably established.

Finally, it will be recognized that before this cycle can be begun some lowering of the general condition of the organism must have occurred, and in taking the history of such cases, if they are approached with a psychological point of view well in mind, it will be found that some change has occurred in the circumstances of the patient which might be expected to set up an anxiety state, and that it is usually from such a beginning that the condition takes its origin.

When the cause which has originated this anxiety state has already been removed, then the condition can be successfully treated by the bacteriologist and endocrinologist, but unless this fact can be definitely established, any attempt to treat such cases without the aid of psychotherapeutic measures will too frequently end in disappointment.

Asthenocoria*

A New Sign of Suprarenal Insufficiency with a Few Considerations on Endocrine Therapy

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Not all physicians admit the existence of a state of hypoadrenia and on account of this fact I would like to explain what I understand under that denomination. Our conception of this condition only goes back to 1855, when Addison described the disease that later on received its name. This was considered the only form of adrenal insufficiency until Dieulafoy and his pupil, Bressy, observed some cases presenting the characteristic signs of Addison's disease without pigmentation. These cases they called abortive forms of Addison's disease.

Sergent and Bernard, following the investigations of Brown-Séquard continued by Abelous and Langlois, showed that the disease described as Addison's, was in reality a complex syndrome in which two types of symptoms could be made out; those resulting from an adrenal insufficiency (among which asthenia and circulatory disturbances) and symptoms resulting from an irritation of the sympathicosuprarenal nervous system, among which pigmentation was the most characteristic.

They described adrenal insufficiency as: the expression of the decrease or the supression of adrenal functions and separated it from the syndrome of Addison, characterized by pigmentation. They considered the bronzed disease, described by Addison, as an association of the syndrome of adrenal insufficiency with that of a sympathetic affection. This conception to my mind, is erroneous, as the relation between the suprarenals and the sympathetic nervous system is so intimate that there cannot be an adrenal insufficiency without the sympathetic being affected.

Later on, especially since the war, many authors have described several syndromes of hypoadrenia. So Eppinger and Hess, of Vienna, Sajous, of Philadelphia, Professor Josue, of Paris, who has described an asystolia of adrenal origin, occurring in cases of certain cardiopathies in soldiers, the socalled hypoadrenal types of Satre, the Italian authors, Frugoni and Gardeghi, who have connected a state of hypoadrenia with typhoid fever and Da Fonseca, of Brazil, and Ricoldoni, of Uruguay, who described an influenzal adrenal insufficiency. Other authors, Sergent, Hutinel, Ribadeau-Dumas, and others, have found a condition of hypoadrenia accompanying almost every infectious disease. This is not surprising, as the adrenals play such an important part in our means of defense that Cannon has considered their hormone an emergency hormone.

The cases of hypoadrenia studied by me are those presenting a well defined syndrome of suprarenal insufficiency with progressive asthenia, rough breathing at both apices (the socalled pretuberculous cases), arterial hypotension, digestive disturbances, low temperature, weak heart sounds and the syndrome so well named, hyposphyxia, by the late Professor Alfred Martinet. Sergent's adrenal white line and pigmentation were not found very often but Pende's sign (goose flesh, after rubbing the skin) and dermographism were present in most cases. In all of them I observed a sign that I want to report

*Read before the Hillsboro Medical Society.

here and that so far as I could ascertain, nobody else has described. I offer it to you for consideration and further confirmation. When exploring the pupillary reflex I found that the iris of these cases, although reacting readily to light, the contraction was flabby, lazy, in a word asthenic. By making the patient look at the light we see that immediately after the initial miosis the pupil starts to dilate slowly as if it doesn't want to, seems to try to contract again, but dilatation gains the upper hand and after a fight between miosis and mydriasis lasting for about forty seconds, the pupil remains dilated in spite of the persistence of the exciting agent. This sign is constant and present in all cases of hypoadrenia and in all its clinical forms. In the normal individual it does not appear as I have investigated. All patients presenting this sign that I would like to call asthenocoria, have been benefited by suprarenal medication.

A few clinical histories will present the matter more clearly.

Case I.—Miss M. B., fifteen years old; menstruation started at twelve, regular until five months ago when it disappeared. She was referred to me by Dr. Andrews, and I examined her thoroughly. The family history and personal history were negative. The present illness started five months ago when she lost her ambition and appetite, menstruation stopped, and she felt a sensation of fullness after meals. At the start pregnancy was suspected. The skin of the patient was somewhat darker than the average Latin, but she was a brunette and no further attention was paid to this fact. The chest examination disclosed rough breathing in both apices. The nails and lips were slightly cyanosed (Martinet's hyposphyxia). The heart beat slowly, no murmurs. The hands were cold and dry. Sergent's white line could not be detected in spite of the dark skin. Pende's sign was present; when examining her pupil asthenocoria was found. A diagnosis of hypoadrenia was made. Adrenalin was prescribed, ten drops three times a day, and fifteen days later the patient was seen; she didn't feel better. I prescribed total adrenal gland, desiccated, thirty centigrams three times a day. The patient came back after a month and said she felt much better. She liked to go to school and to work at home, and she had developed an enormous appetite. She had gained six pounds. Menstruation was still lacking. She was told to continue the treatment, and I saw her two weeks later and the improvement continued. She had gained altogether thirteen pounds, and her appetite was ravenous. Asthenocoria had disappeared, the pupillary reflex was normal, menstruation still lacking. I combined the adrenal extract with ovarian extract, ten centigrams three times a day. I saw the patient a few days ago, and the improvement had continued; menstruation had returned, although it was scanty.

Case II.—Mr. J. D., eighteen years old, came to me as a suspicious case of tuberculosis. I found a tall, thin young man, dark skin, presenting rough breathing on both apices and a few fine moist râles scattered over the right upper quadrant, slight impairment all over right chest. Felt constantly tired, had no ambition to work and among other signs of hypoadrenia, I found Sergent's white line, Martinet's hyposphyxia and asthenocoria. The temperature was subnormal (35.4° C.), pulse rapid (100), blood pressure, systolic, 105, and diastolic, 70. The sputum was sent to the laboratory for examination and it comes back negative; but as the findings on the lungs were suggestive of tuberculosis, I recommended rest, fresh air, a rich diet, and prescribed total adrenal extract, thirty centigrams three times a day. A month later I saw the patient again and I found that the lung findings were characteristic of tuberculous involvement of the right upper lobe. He now showed a temperature of 37.5° C. in the afternoon, his appetite had improved in spite of all this, and he had gained one and a half pounds. The pupillary condition had changed from asthenocoria to anisocoria, the pupil remained relaxed in the right eye while the left pupil contracted normally. The sputum was again sent to the laboratory, and reported positive for tubercle bacilli. I think that this was a case of tuberculosis from the start, but his lack of defense was such, that he was unable to react actively to the toxins. Only when his adrenal function was reestablished was he able to respond with a slight glimmer of energy to the attack of the infective agent. The patient was put to rest in bed and adrenal treatment continued. He is still improving although the fever persists.

The two foregoing histories are typical of the kind of cases studied by me under the general heading of hypoadrenia and, therefore, I shall not tell the same history again. However, I recall the case of a woman who gave a history of hypoadrenia with menstruation and without asthenocoria. She was placed on adrenal extract and grew worse. In view of this fact I changed the treatment to ovarian extract combined with foreign protein therapy. The woman improved in so far as to be able to take up her work again. This case is interesting because it is the only one of my series in which the patient was not a Latin, although her hair was black and her skin dark: she was a Slav.

I have no theory to offer as to the mechanism of asthenocoria. I don't know whether the relaxation of the pupil is provoked by stimulation of the sympathetic or by muscular fatigue as a result of a decreased adrenalin supply. While discussing this paper with Dr. Taylor, he told me he had observed a similar pupillary reaction in cases of high blood pressure. Shortly after this discussion, I had occasion to study the behavior of the pupil in such a case of high blood pressure and I found that although there is in such cases also a fight between miosis and mydriasis, miosis remains victor. All my patients had a low blood pressure.

The treatment of hypoadrenia should tend, first, to remove the cause of the condition if possible, and to be completed by the use of suprarenal powder of the total desiccated gland. Generally speaking, when administering organotherapy the entire organ should be used. An aqueous extract of the active principle, although producing wonderful physiological results in a given direction, is incapable of substituting the action of the whole gland.

There may be other active principles besides the one we know. The objection that by giving the gland by mouth, the hormones may be destroyed, cannot be admitted because being of the nature of

enzymes or ferments, they are absorbed and eliminated without change after the catalytic action has been exerted. This catalytic action may be multiform, either by stimulating the sympathetic nervous system alone, the secretory activities of the specific gland, the cellular activity of said gland or all of these functions together. We must remember that the endocrines are closely related, especially the suprarenals, to the sympathetic nervous system and that their function very likely is not merely limited to the secretion of a given substance, but on the contrary, they are capable of producing nervous impulses regulating the different functions of the body. These impulses cannot be produced by the socalled active principle alone but only by the glandular cell as a physiological complex with all its biochemical, physical, and even mechanical and morphological constituents.

Gonads of Women From an Endocrine Viewpoint

By JANE NORTH BALDWIN, M.D.,
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There is a very close parallel between the gonads of the two sexes both as to their origin and to their function. Each has its external secretion and, as Brown-Séquad has so very ably proved, each has its internal secretion as well. His experiment upon himself has been duplicated by various methods, Steinachs and others, but the anatomical difference makes the demonstration of internal secretion of the ovary more difficult.

Embryologically both the ovary and testes develop from the Wolffian ridge. The biochemistry of the internal secretion has not yet been completely worked out, nor has the active principle been found as has the adrenalin content of the suprarenal glands, the pituitrin of the pituitary, the thyroxin of the thyroid or the more recent discovery of the insulin of the pancrease; this, however, can only be a question of time. We now have the lutein of the lutein cells of the corpus luteum and its power has been more markedly proved by veterinarians than by the medical profession. As we study the formation of the corpus luteum we find it develops in the graafian follicle after the escape of the ovum and consists of large epithelial cells filled with fat pigments and cytoplasmic elements. We all know its life cycle and it has been found that the persistence of corpus luteum of pregnancy causes sterility in cows and upon its removal fertility returns.

Marshall and Jolly assert that the injection of corpus luteum in castrated females causes congestion of the genitalia resembling the phenomenon of rut. In our own therapeutics, we certainly use it most successfully in the physiological change at the menopause as well as in the nausea of pregnancy and other conditions. The interstitial cells of the ovary corresponding to those of the testes are believed to develop from false yellow bodies, that is, from the atresic follicles from which the ovule has not been liberated but absorbed and changed into strands of cells granular in nature, having lipoid content. By others they are supposed to be modified connective tissue cells. Most histologists now believe the interstitial cells of the ovary produce lipoidal secretion in common with those of the testes and the suprarenal gland. The therapeutic power of the whole gland of the ovary or that of the ovarian residue or that of the corpus luteum alone is greatly disputed and each has its strong advocates as well as those who consider there is no value at all in any of it. Novac says, "The difference between the remarkable testimonial of the patent medicine and many socalled clinical reports, is that in one instance the gullibility of the laity is displayed and in the other the credulity of the equally human medical profession." When he cites the following conditions for which ovarian extracts have been given we do feel we are standing on uncertain territory. Amenorrhea, functional bleeding, dysmenorrhea, infantilism of the generative organs, vasomotor and nervous disturbance of the menopause, sterility, vomiting of pregnancy, pruritis vulvæ, deficient mammary secretion, epilepsy, Graves's disease, but we must have some really scientific data from which to work and light is certainly coming from both laboratory and clinic.

As with the other incretions of ductless glands and those which have excretions as well, the gonads may have hypersecretion or hyposecretion or at times one and then the other dysfunction with characteristic symptoms accompanying and the hypersecretion or hyposecretion may be from a cause primary in the gland itself or secondary from the influence of other glands, giving us the multiglandular syndromes (Timme). The gonads of either sex seem to have little influence on the individual either physical or psychical until the advent of puberty, at which time the secondary sex characteristics develop.

However, the removal of the gonads in the male before puberty produces characteristic eunuchs of either the tall, thin type or more frequently the heavy, fat type. Castration before puberty in the female is so uncommon, if at all, that we have little scientific data. Roberts reports a sect in India, which castrated little girls who grew into tall, thin, masculine types of women with no breast development or secondary sex characters. However, there has been much work done experimentally upon animals and we know that we get disproportionately long extremities, retardation of epiphyseal closure and other conditions. Removing ovaries in birds causes appearance of male plumage. The agenitalism produced by castration after puberty gives us the symptoms of artificial menopause, the change of voice being marked, also hirsutism and obesity. The agenitalism due to congenital absence of ovaries is greatly

questioned and Olshausen believes that a rudimentary uterus or vagina can be found. Sunquists reports the case of a woman thirty-four years old, who was 183.6 cm. tall; upper length 118 cm.; never menstruated, no inclination for men, small mammæ, small nipples, small genitalia with hypertrophied clitoris, no introitus vagina or hymen. Neurath reports the case of an eleven year old girl with eunuchoid obesity, fat deposits on lower abdomen, buttocks, mons and thighs, with deep furrows about the mons.

I have had a case in a girl of twenty who was slightly above medium height, with fine features and skin, slender boyish figure, scarcity of hair over body which was of female type, and no introitus vaginæ, of course no menses and no generative organs palpable or any mass over the suprarenals. I regret having been unable to follow up the case with x ray and laboratory findings, but the patient was very sensitive and had no sympathy with any scientific interest.

In hermaphrodism and pseudohermaphrodism we may have, 1, ovary on one side and testicle on other; 2, ovary and testicle on one side, either, both or neither on the other; 3, ovary and testicle on both sides.

The advent of puberty differs in different climates, in this climate averaging about the age of thirteen. We have not space to describe the cycle in detail, anestrum, proestrum, astrum, etc.; but we do know that grossly the uterus about doubles in size within a few months, that secondary characters appear, that the psyche of the person changes and that other glands enlarge, particularly the breasts and the thyroid. The thymus is believed to atrophy at this time. We may have general symptoms of chlorosis and occasionally marked psychical disturbances.

Conversely we have the other extreme of sexual life, the menopause, at which time the gonads normally atrophy producing the well known physical and psychical changes. It is here that the hormone of the ovary is of inestimable value, corpus luteum five grams three times a day or lutein one ampoule every second or third day, ovarian residue five grains three times a day.

The functional uterine bleeding at menopause can be well controlled with pituitary extract one grain three times a day whole gland or one quarter grain three times a day of anterior lobe, of course eliminating first any possibility of organic trouble or malignancy.

Geist believes that this bleeding is due to absence of corpus luteum. Schroeder also reports some cases in which corpus luteum was absent. The interrelation of the glands of internal secretion is also shown with the functional bleeding at puberty in which the use of thyroid extract is sometimes valuable. I recall a case I had several years ago in a girl of eighteen who had continual uterine bleeding. All kinds of internal treatment was tried with rest, ice bags and douches, and finally dilatation and curettage. Relief was only temporary and to my amazement she returned to me after another similar operation, only this time one ovary had been removed and she was told that if no relief was obtained a hysterectomy should be performed. There was no relief, but instead of a hysterectomy we gave her two and a half grains of thyroid extract daily, which controlled her perfectly. She is now married, has two fine children, but is obliged to continue her thyroid feeding.

Besides the physiological amenorrheas we have the amenorrheas due to: 1, general disease, chlorosis, tuberculosis and others; 2, acute fevers; 3, infections, gonorrhea, sepsis; 4, hemorrhage, into the ovary; 5, climacteric changes; 6, psychical influences, shock, mental diseases, and 7, dysfunction of the ductless glands, the hypothyroids producing ovarian hypofunction, the hypopituitary as seen in Fröhlich's syndrome, pituitary type of hands, distribution of fat between waist and upper part of thigh, etc., and no menses, and hypoplasia of the adrenal cortex producing amenorrhea.

Dysmenorrhea is another gonadal symptom in young women, married or single, which may be due to a neurotic factor or mechanical cervical obstruction, or uterine hypoplasia of pituitary influence, which should be treated with pituitary extract.

Primary menorrhagia and metrorrhagia is probably due to ovarian hypersecretion, therefore pituitary and thyroid extracts should be given. In primary ovarian hypersecretion we have precocious puberty that is advent of menstruation and secondary sex characteristics before the age of nine and usually a subnormal mentality. Brohl found a cystic ovary in the case of a seven year old girl who returned to normal after its removal. Pubertas precox is more often seen, however, in connection with tumors of the pineal gland or the suprarenals, teratomata or hydronephromata. Neuman reports twenty-two cases, Horrax reports a case in enlargement of the sella.

Von Haller has reported the case of a girl who menstruated at two, became pregnant at eight, and lived to be seventy-five, and Beekman, the case of a girl six and a half, with the bodily development of eleven; x ray showed enlarged sella. With these tumors we also see virilescence, precocious bodily and mental development, with hair on mons, face and axilla, but no menses or sexual maturity.

In women status thymicolymphaticus is demonstrated by peculiar character of skin of the body, slender thorax and extremities, scantiness of hair in the axilla on pubes and genitalia with hypoplasia of the genitalia.

The effect of the gonads *per se* on gigantism or infantilism is much questioned. Their destruction in preadolescence would cause hypertrophy of the hypophysis which in turn would affect growth, therefore their action would seem an indirect one. Much experimentation has been done on both the mammary glands and with the placenta in an endeavor to prove they possess a real incretion. That there is a direct relationship between uterus, ovary and mammary gland cannot be doubted, as witnessed at puberty in enlargement of the breasts, in their congestion at time of the menses, in their functioning during lactation and their atrophy after menopause. Removal of the ovary is followed by atrophy of the mammæ. Ovarian transplantation has been followed by enlargements and secretion of milk. Mechanical or electrical stimulation of the breasts produces uterine congestion and contractions.

Reports of placenta experiments are also conflicting, but Hammet believes it has an incretion which

causes uterine hyperplasia and that the rate of growth in breast fed infants is enhanced by feeding the mother desiccated placenta.

The field of endocrinology from a scientific viewpoint is a relatively new one, across which we should walk most carefully and not gallop on the back of empiricism and exaggerated claims. However, if we dig deep into laboratory and clinical findings there is great promise of unearthing much of genuine value.

NEUROLOGICAL INSTITUTE.

Rôle of the Endocrines in the Growth and Nutrition of Children

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Until quite recently little was known about the complex processes involved in cellular nutrition and growth of children. The ductless gland secretions play a great rôle in preparing the tissue cells to utilize the food elements.

Malnutrition in childhood is more than a question of insufficient food or deficient vitamines. We find it in a great proportion of the well fed or well to do, as well as among the poor, and it is not rare to find an excellent state of nutrition where the food supply is scanty. The malnutrition which is severe enough to be reckoned as a factor in faulty development is usually the result of a hypoplasia or endocrine insufficiency. The vitamines, so vital for the sustenance of life, known as the fat soluble A, and water soluble B and C, and even vitamines D and E recently described, are present in most foods, particularly animal fats, milk, fresh green vegetables, polishings of rice, maize, tomato, potato, yeast, orange, lime, and lemon juice. These vitamines are essentially stimulants and restoratives to the production of hormones and metabolic processes. There is close connection between the function of these and the ductless glands, a fact demonstrated experimentally by McCarrison, Funk, Emmet and Allen. It seems that the hormones prepare the tissues, giving them receptive power to receive and properly utilize the vitamines. It is paramount, for the best interests of the patient, that the physician, as well as the consultant, should be able to detect the early changes of the ductless gland disturbances that give rise to the various nutritional disturbances so common during infancy and childhood, so that remedial aid can be effective. Among these disorders are marasmus, rickets, acidosis, and diabetes, hypoadrenalism and hyperadrenalism, hypothyroidism, and hyperthyroidism, lymphatism and dyspituitarism; hemopoietic and pluriglandular disturbances.

Cases of marasmus at autopsy frequently showed an abnormally small thymus. We all know how these cases resist all forms of treatment. In many of my cases small doses of thyroid with thymus or lymphatic gland substance gave excellent results.

As to rickets, Harrower describes it well, stating: "It is a nutritional disorder of children, a form of starvation, hence before it can be treated effectively we must know what factors are prominent in the production of the disturbed metabolism and what elements can be given acceptably to replace those that are deficient." From an experimental viewpoint, rickets is now understood to be a result of endocrine disorder. It is definitely known that the ductless glands influence the metabolism of mineral salts in the body. There is no doubt about the important rôle calcium salt metabolism, and the ductless glands that govern this, play in the human economy. Howland and Kramer found in the serum of young children a low content of inorganic phosphorus in cases of rickets. When treating rachitic children we must aim at the calcium metabolic disturbance and improve the lymphatic circulation. Thyroid extract gave excellent results in many of my cases and in obstinate ones a pluriglandular formula, containing extracts of thyroid, parathyroid and lymphatic gland substance, helped. In the interim glycerophosphates of lime and soda or compound syrup of hypophosphites may be given.

In the hypoadrenal type of malnutrition the children are pale, emaciated, are easily tired, asthenic, chilly, and show a low blood pressure, capricious appetite, cold extremities, sluggish mentality, often associated with nephritis, because of the accumulated waste products. These patients are helped with thyroid and suprarenal extracts, good food, enforced rest and care of the emunctories. The opposite type or the hyperadrenal child, is tall, dark, thin, active and delicate, with long silky hair. These children often complain of indigestion and anemia. In these cases pancreas substance in large doses is effective.

The lymphatic type of malnutrition includes cases in which the liver, spleen and lymphatic glands are definitely involved. These children appear to be undernourished and phlegmatic. They breathe like asthmatics and are subject to various blood and lymphatic dyscrasias. The lymphatic glands, including tonsils and adenoids, may be enlarged. They are predisposed to tetany and convulsions. The asthenic type improves upon the combination of Leydig cell extract, lymphatic gland and thymus. In the general treatment of these cases organotherapy must be directed at the most obvious phases of the symptomatology to correct the disturbance.

Thyroid insufficiency produces the lazy, obese and constipated type of children. They are easily fatigued, have poor appetites, are sluggish mentally, often complain of arthritic and muscular pains, with frontal and occipital headaches. The secondary sex characters may be undeveloped. They are benefited by long continued increasing doses of thyroid. The hyperthyroid type shows its abnormal changes about puberty. They are as a rule tall, thin and highstrung, similar to the adrenal type, often manifest exoph-

thalmos, and show evidences of sympathetic irritation. They blush and perspire freely. Urticaria and other dermatoses are frequent. Migraine, neuritis and active mental disorders are common. Pancreas and thymus gland substance help somewhat. Atropine and quinine hydrobromide are synergistic.

In malnutrition associated with anemia, blood dyscrasias such as purpura, hemophilia and scurvy have been found clinically and experimentally to be due to faulty metabolism, reduced alkalinity of the blood, changes in the viscosity of the blood and disturbances of the hemopoietic organs and lymphatics. Thyroid and the gonads increase the hemoglobin content. Thymus, thyroid and calcium lactate increase coagulation time. The latter is important, for in tonsillar operations the administration of thyroid and calcium lactate for a few days prior to the operation will improve the effect of the anesthetic, diminish operative and postoperative bleeding, and shorten convalescence. This was my experience in many of my cases, as reported to me by Dr. C. N. Gelber, who operated. Iron compounds, arsenical preparations, hemoglobin and lymphatic substance are synergistic. The treatment directed at the anemia is bound to fail unless these fundamental underlying elements are regulated simultaneously.

DIABETES AND ACIDOSIS.

Without a doubt the capacity of the body to burn up sugar is related to the ductless glands. It is known that hypopituitarism causes a marked increase in the tolerance to sugar, and that the adrenals, thyroid and pancreas are definitely related to glycosuria. Acidosis is frequently the cause of death in diabetes. Diabetics have a tendency toward a deficiency of the alkaline reserve and consequently to an excess of acid substances of the disturbed metabolism. Allen contends that feeding fat while withholding carbohydrates is the surest way to induce acidosis in diabetes. Langdon Brown regards diabetes as a product of an exaggerated metabolism evoked through the sympathetic. The thyroid, adrenal and pituitary are all overstimulated but the pancreas is underactive, thus affecting carbohydrate metabolism. In treating diabetes we must counteract the excessive metabolism and increase the internal secretion of the pancreas.

Normal body and mental growth and nutrition are to a certain extent dependent upon a normal set of teeth. The internal secretions have a certain favorable influence upon the dental tissues in bringing about eruption; cause sufficient calcification previous to eruption which is concerned in the prevention of caries through the alkalinity of saliva; arrest decay should caries supervene and, possibly by means of a trophic action, keep the tooth tissue in such healthy condition as to resist caries. In the causation of caries of the teeth, the ductless glandular balance is upset in the direction of calcium hunger. Experimental removal of the thymus caused delay in the development of the teeth, of the thyroid retention of the deciduous teeth. Dyspituitarism gives rise to all sorts of teeth abnormalities as to shape and position of the teeth. I had many cases where small doses of thyroid hastened the eruption of teeth and minimized reflex socalled teething symptoms. Also in skin lesions, we find quite frequently organotherapy effective where all other usual therapeutic measures have failed. A. Z. Hall and Edelman have reported cases of children literally covered with a sticky eczema wherein small doses of thyroid cleared up the condition when all ordinary treatment was of no avail. Aside from the nutritive disorders of children, developmental anomalies and disturbances of growth must also be considered as important and to a certain extent interdependent endocrinologically. The conditions of abnormal growth and development, especially in children requiring special attention, constitute a serious and difficult problem in medicine. Laboratory investigations and clinical experience have shown that disturbances of the internal secretions, particularly the thyroid, pituitary, thymus and gonads, are responsible for the anomalies of growth and morphogenesis. The difficulty in diagnosis, as well as treatment, lies in one's ability to recognize these abnormalities early, when our efforts are more likely to be effective.

In the class of cases of growth dystrophies, many of the stigmata obviously are manifestations of an organic nature and should not be expected to be remedied. But since the underlying element is a disturbed function of some of the endocrine glands, their remarkable responsiveness to hormone stimuli may enable us to bring about some noteworthy organic changes, so that even in these cases organotherapy may assert a definite influence upon structural, as well as functional defects. The differentiation between those defective children that are likely to respond to organotherapy and those in whom there is no likelihood of benefit is very difficult, and it is a serious thing to doom a child to lifelong disability by saying that this or that method of prospective merit need not be used because it is useless. The importance of giving early attention to the defective child cannot therefore be too strongly emphasized.

In discussing the subject of infantilism, there is great difference of opinion as to its etiology and classification. Infantilism has been divided into two main groups: the Brissaud type, or hypothyroid condition, in which the somatic and psychic characteristics are accompanied by the facial and physical signs of thyroid insufficiency; and the Lorraine type miniature men (Meige), a group wherein the subject is of small dimensions. Maranon divides them into endocrine infantilism, i. e., thyroidic, pituitaric, pancreatic, adrenal, hepatic and essential infantilism of gastrointestinal and infectious origin. Bauer considers that in all cases of infantilism the patients are not really sick, but miserable physiological specimens constitutionally weak. Cavengt applied the term patocativism to describe infantilism of either monoglandular or pluriglandular form. Autopsy in many cases of infantilism proved all of them to be of pluriglandular origin. I believe with Cavengt and Chauvet that all cases of infantilism should be diagnosed early from the moment the patient reaches us, and to fix the time of its inception as related to the age which corresponds to the size and weight and other characteristics instead of waiting until puberty for diagnosis. The earlier treatment is applied the greater the improvement and the more rapid the results. The adrenal infantilism of Moriat is occasionally encountered. Herter, in 1908, called our

attention to intestinal infantilism, of which there are two types, the Huebner occurring during the first year, and the Herter occurring in the second year or later. Karrer, Cavengt and L. I. Harris reported such cases. In Dr. Harris's case the patient improved after a blood transfusion. It may have stimulated the individual's hormones to activity as growth from then on was progressive. In most of these cases that came to autopsy, there was found hypoplasia, congestion, degeneration and sclerosis of the various ductless glands, one more affected than the other at the same time.

Another cause of confusion is dwarfism. The essential dwarfs of Chauvet are perfect beings within their height, the numerous somatic atrophies which these subjects suffer not indicating constitutional weakness, as in infantilism. These have a degree of health considering their small size, their functions are normally performed, and their brains are as well developed as normal individuals of their age. Dwarfs are divided into proportionate dwarfs or "adults in small mold;" and do not present normal sexual or osseous development, and disproportionate dwarfs, wherein we find undeveloped members of the body, such as one upper or lower extremity, one side of the face, etc., shorter than the other half, also known as achondroplasia. Parrot, Porak, Marie, Bassoe and the author have described and reported a number of these cases. Thymus gland substance has some influence in these cases when administered early, particularly when associated with pituitary and thyroid extracts. In some of the cases of arrested growth, the subjects become prematurely old, a condition known as progeria. This condition usually begins in youth and little can be done for them.

I shall now consider the other abnormal growth dystrophy known as gigantism and acromegaly. The influence of the pituitary, particularly the hypersecretion of the anterior portion, thyroid, and gonads on gigantism, no matter of what type has been unquestionably demonstrated. The pancreatic function is undoubtedly also altered because of the accompanying glycosuria. When gigantism and acromegaly are combined, the latter is usually preceded by the former. Gigantism begins before epiphyseal lines close or in childhood. Horrax states "that these cases after a while tend eventually to hypofunction of the hypophysis, expressing itself in weakness, hypotrichosis, impotence, adiposity and low body temperature." Such symptoms also indicate hypothyroidism. The symptoms of acromegaly develop slowly over a period of years. In some patients the cerebral and genital symptoms appear years before the skeletal changes are noted, as also the characteristic spacing of the upper central incisors due to enlargement of the superior maxilla. These patients are irritable, bright, distrustful, petulant, indecisive, abusive and unreliable. A Wassermann test should be made in every case because of the frequency with which syphilis is associated with acromegaly. The Froehlich, Burnier and Cushing types include most all the possible dyspituitary syndromes. An amyotrophic form, a painful one associated with gigantism, trophedema, myxedema, and one accompanied by severe nervous and mental symptoms were also described. W. Timme, recently described a pluriglandular compensatory syndrome of thymus pituitary combination beginning in youth some years before puberty and going through four stages in about two decades. The first stage indicates characteristics of the status hypoplasticus of Bartels showing a general hypoplasia of the endocrines with a hyperactive thymus. The second stage shows the gonads beginning to grow active with adrenal insufficiency, and then comes the all important third stage in which the pituitary gland is the critical factor. There is the tendency of the pituitary to become hyperactive or erode the sella or its capsule to compensate for the deficiency as shown in the fourth stage. Long continued and graduated doses of pituitary extract help these patients materially, with favorable prognosis. French authors have also described a thyrogenitopituitary syndrome.

In cases of eunuchoid gigantism the patients usually present the dystrophy of long limbs, small head, female pelvis cushioned with fat, scanty pubic hair and infantile genitalia. Here we have defects of the testicular interstitial glands, hypophyseal disorder and hypothyroidism accounting for the symptoms, outlined above, with skin changes and carious teeth.

In conclusion I wish to emphasize the need of early diagnosis and early treatment. Each patient must be individualized and studied separately. In addition to organotherapy the child's or patient's mode of living must be regulated regarding the hygienic environment, regular hours of sleep, normal bowel function, bodily cleanliness, mental and physical recreation. The food should be plentiful, wholesome, palatable, nutritious and rich in vitamines and calories to meet the necessary individual requirements.

From the viewpoint of diagnosis, symptomatology, pathogenesis and therapeutics in nutritional and growth disorders of children, the ductless glands and their internal secretions play an important rôle in solving many of the formerly unknown problems as to etiology of various syndromes and complexes.

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Ovarian Feeding*

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Of all the endocrine preparations, those made from the ovary seem to be the most frequently prescribed. The price of the raw glands has risen from a few cents a pound ten years ago until now it is in the neighborhood of five dollars, and any woman who presents obscure symptoms is fortunate if she escapes this rather costly medicament. Nevertheless, there is little or no knowledge of what the active material in the ovary is, whether it lies in the corpus luteum, in the socalled interstitial cells, or in both, or of where or how it produces its effects. Some experiments with extracts of this gland seem to prove that its administration is followed by an increase of pituitary secretion in the spinal fluid and so, apparently, connects the secretory activity of the ovary directly with that of the pituitary gland.

In the Cornell Laboratory, the castration of bitches is followed at the end of three or four months by a great increase in the animals' fat, or a change well recognized in everyday experience, and also by a relatively large increase in the iodine content of the thyroid but without any noticeable change in the size of this organ. So there are some definite reasons for believing that the pituitary, the thyroid and the ovary are functionally related. In the anatomical department at Cornell, it has been demonstrated that the œstrus of the guineapig occurs at regular sixteen day intervals and lasts about twenty-four hours. Ovulation occurs during each heat period, and a "marked correlation exists between the œstrus changes in the uterus and the developmental cycle of the corpora lutea." During this cycle, which represents the maturation and rupture of the graafian follicles and the degeneration of the corpus luteum, there are typically corresponding changes in the vagina, uterus and ovary, and they can all be recognized by microscopical examination of a smear taken from the interior of the animal's vagina (1). Changes in this cycle can be induced and detected by the administration of various glandular extracts, particularly if they are made from the ovary, and the test looks very promising for learning something definite about the physiology and comparative activity upon the genital tract of the component parts of the ovary.

For medicinal use, the most available sources of ovarian supply are the cow, sheep and pig. In our work, the sheep has not been employed. The young cow ovary is about the size of the terminal phalanx of a large thumb, and usually contains one globular corpus luteum some half inch in diameter with a few drops of follicular fluid and one or two other less fully developed globules. These can be readily trimmed away from the rest of the ovary, and are presumably the source of the sterile extract of corpus luteum so commonly employed hypodermatically for the vomiting of pregnancy. Its efficacy is variable or uncertain, and rests upon somewhat doubtful reasoning. The old cow ovary generally contains no gross corpus luteum or graafian follicle, and can be used for determining the effects, if any, of the so-called interstitial cells. The pig's ovary is about half the size of that of the cow, and is covered with a great number of corpora lutea, or graafian follicles, some eighth inch in diameter, and each holds more or less of the follicular fluid.

The tablets, or powder, of ovarian substances, or of corpus luteum, are made by various methods of defatting and desiccation chiefly of these two animals' ovaries, or of the cow's corpora lutea. The defatting process is necessary for the removal of the lipoids which prevent drying and so produce putrefaction. There is, however, a method apparently not yet in commercial use, by which animal tissues can be dried without change except in the removal of water. Aqueous extracts cannot, of course, contain in solution any appreciable amounts of fatty material which many experiments suggest are essential.

Some years ago, in an attempt to surmount these difficulties, in defatting and drying, there was introduced the nucleoprotein substance which was derived chiefly from pig ovaries. This preparation presents some advantages over the common desiccated product, but is not always as efficacious clinically as it should be, and we have, therefore, been seeking others. For extraction purposes, glycerin offers many advantages. It disintegrates cells and takes from a gland its water soluble and most, if not all, of its lipoidal contents, but is not an ideal preservative. This medium, by the way, was the one first used to introduce organotherapy by thyroid feeding.

In some preliminary experiments conducted at Cornell by Dr. Blau, from the Department of Chemistry, in conjunction with Dr. Papanicolaou in the Department of Anatomy, to determine the comparative effects of different derivatives of the ovary upon the guineapig's œstrus cycle, there have been obtained some very suggestive results. All of the defatted, or common commercial desiccated ovarian materials are either uncertain in their effects or inert. Of the extracts of fresh glands, those made with alcohol or glycerin seem the most active, and both of these kinds of extracts contain more or less of the lipoids. Incidentally, the follicular fluid which can be obtained from the graafian follicles of young cow ovaries, though showing some activity, is not as potent as the alcohol or glycerin extracts of the whole corpus luteum or of the whole pig ovary. So far as the experiments now indicate, the glycerin extract, especially if a little defibrinated beef blood is added during the period of its extraction, is apparently the best. If it contains material from the corpora lutea, it seems to induce promptly and to prolong the phenomena of the guineapig's œstrus, whereas if these bodies are excluded the œstrus is apparently postponed and some very curious late results supervene. In other words, the interstitial cells, or their secretion, seem to have some specific retarding effect upon menstruation which differs from that of the graafian follicle and its corpus luteum. Strangely enough, the feeding *by mouth* to oophorec-

*From the Livingston fund for Experimental Therapeutics and Biochemistry in the Cornell University Medical College.

tomized pigs of a glycerin extract of pig ovaries which contain in abundance all of this organ's elements, seems to induce at least a pseudoœstrus. This may be a valuable hint in the treatment of many neuroses of the natural or artificially induced menopause. But as yet the experiments with ovarian materials are not far enough advanced to draw any definite conclusions. It is enough to state that there are now at least promises of physiological tests which seem capable of clearly demonstrating the comparative activity of ovarian derivatives and the location in which they manifest their chief effect. In the absence of such criteria, the common practice of ovarian feeding rests upon very insecure foundations. If the ovary produces a secretion which influences the metabolism of other organs, as there is no doubt it does, we have practically no knowledge of its character nor mode of action, but every step in the elucidation of these problems is of great interest. So far as our experiments indicate, it is reasonable to believe that at least some of the active material is associated with the ovarian lipoids in the corpora lutea, and that this material is capable of producing effects after passage through the digestive tract and so should favorably influence the deficiency disturbances in women which occur at the menopause. It is also possible to infer that it might bring on the menstrual flow in some forms of functional amenorrhœa. For apparently the ingestion of an animal's corpus luteum, with its lipoids, supplies something which either stimulates the development of this organ in the patient, or else takes the place of what it should produce.

In purely functional dysmenorrhœa it is conceivable that the pain has a mechanical origin, which means that it is due to congestion and consequent pressure in an attempt to supply to the ovary some lacking nutriment, and that ovarian feeding provides this specific nutriment. Clinically, the oral administration by mouth of the glycerin extract of the pig ovary rather than any other preparation seems in this particular neurosis most useful.

In functional menorrhagia, or metrorrhagia, entire ovarian extracts should, according to results obtained upon the guineapigs' œstrus, be contraindicated. For any material containing derivatives of the corpus luteum seems to induce and prolong the œstrus and ought to have the same influence upon the human equivalent. If any ovarian products are administered for excessive menstruation, those in which there is an admixture of corpus luteum should, theoretically, be excluded. The treatment by this form of organotherapy of the almost countless neuroses or disorders of nutrition without demonstrable organic lesions, and I regret to say of many diseases which have no known relationship to the ovary, is only justifiable by its harmlessness. Nevertheless, it should be noted that not infrequently excessive or prolonged ovarian feeding may induce an acute and sometimes febrile disturbance with nausea and vomiting, and occasionally a palpable enlargement of the liver. At present the only definite symptoms for which there is reasonable prospect of relief by "ovarian feeding" are:

1. The hot flashes of the natural or artificially induced menopause, and sometimes the accompanying high blood pressure.
2. The pains of purely functional dysmenorrhœa.
3. An occasional functional amenorrhœa, if the medicament contains derivatives of the corpus luteum.

In all other disturbances known or supposed to originate in the female genitals, little or nothing is known about the effects of this form of treatment. The best form in which the ovarian material can now be administered seems to be a glycerin extract of the fresh pig ovary.

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Exophthalmic Goitre Without Exophthalmos and Goitre*

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Depending upon the presence or absence of bulging eyes and large neck, the diagnosis of exophthalmic goitre may be either an extremely simple or an extremely difficult task. Because of the questionable presence, late occurrence, or total absence of eye and neck signs in a large percentage of sufferers from this syndrome, such diagnoses as early phthisis, diabetes mellitus, paroxysmal tachycardia, nervous indigestion, neurasthenia, and occasionally, during a crisis, acute appendicitis, gallbladder disease, or insanity, are resorted to. The main causes of error in the diagnosis of atypical goitre are two: First, the elusiveness of the symptomatology in a large percentage of instances, and second, the term exophthalmic goitre itself.

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The more intensely one studies this syndrome the more one realizes that a swollen thyroid and bulging eyes are not essential to its diagnosis. Rather than accept the usual definition in which exophthalmos and goitre are depended upon as two of the four cardinal symptoms, it would seem that the following definition would be far less misleading: Graves's disease (Basedow's disease, Parry's disease, Flajani's disease) is a chronic, rarely acute affection, apparently due to a dysfunction of the endocrine organs and of the vegetative nervous system, characterized by increased catabolism, afebrile heart hurry, emotional disturbances, tremor, dermographia, weakness, loss in weight, and usually also by a varying degree of exophthalmos and thyroid hyperplasia.

In approximately twenty per cent. of instances the

thyroid is never appreciably enlarged, and in about fifteen per cent. the eyes never protrude in otherwise typically outspoken Graves's disease. The percentage of cases without exophthalmos and without goitre is apparently much greater if we take into account the instances in which these signs occur late in the affection. Is it not evident, then, that the term exophthalmic goitre is misleading and should be relegated to the list of obsolete terms? For want of a better name let us rather adhere to the term Graves's disease to designate this widespread affection,—a disease which should be removed from the classification of goitre and placed in the category of constitutional affections. This, more than any other procedure, would assist in keeping the busy practitioner's mind open in difficult cases and thus reduce the number of errors committed.

From a study of a large series of cases I find that the most constant evidences of active Graves's syndrome are:

1. A basal metabolism of over plus fifteen.
2. Afebrile heart hurry[1] of over 90 a minute, not materially reduced by sleep or by the administration of digitalis and allied drugs.
3. Emotional disturbances with a reduction of the threshold of emotional response and a quickening of mental activity.
4. Fine tremor of the outstretched fingers.
5. Dermographia and a varying degree of hyperidrosis.[1]
6. A relative immunity to cinchonism (in approximately ninety-seven per cent. of cases).

These clinical factors are sufficient for an accurate diagnosis, existing in combination in all active cases of Graves's disease and coexisting in no other affection.

Why does one patient present exophthalmos, goitre, or both, and why is it that in another there is an absence of one or both of these signs? The consensus of opinion regards exophthalmos in Graves's disease as due to stimulation of the cervical sympathetic. If this be true, it is reasonable to assume that the absence of exophthalmos is due to an insufficiency or absence of stimulation of the responsible ganglion. Moreover, in a considerable percentage of cases the presence or absence of exophthalmos depends upon the personal equation, and what may be regarded by one clinician as slight exophthalmos, may be ignored by another. Even the exophthalmometer is of no practical assistance in borderline instances. Incidentally, we must not ignore the small percentage of cases in which but one eye tends toward exophthalmos while the other is normal, and the fact that irrespective of the existence of exophthalmos, a larval or outspoken von Graefe's sign is elicited.

The absence of thyroid enlargement in a given patient may be explained on the ground that an organ need not become enlarged in order to enter into a state of dysfunction or even hyperfunction. This, however, must be stated of the thyroid in cases without evident goitre: Even in instances of apparently normal thyroid on inspection. there is usually a definite enlargement on palpation, and on auscultation the typical bruit may be elicited. Here, too, the personal equation of the diagnostician is a factor, for the term goitre is an elastic one, and in doubtful cases what is a goitrous thyroid to one clinician may be regarded as a normal organ by another. Again, we must not ignore the instances of apparently absent goitre in which hyperplastic thyroid structures exist retrosternally or in relation with the tongue, pharynx, ovaries, and elsewhere.

In patients without apparent exophthalmos and thyroid swelling the appearance of fright is absent; instead there is an expression of anxiety or helplessness. The pulse is less labile and hypotension is less likely to occur. In other respects the clinical picture in these cases is similar to that of typical Graves's disease.

Untreated, in such patients either exophthalmos, large neck, or both may develop, or the usual course without neck and eye symptoms may occur. Properly treated, the course of the affection is usually arrested, the favorable progress eliminating among other things the possibility of occurrence of exophthalmos and goitre.

If it be true that typical Graves's disease responds satisfactorily to nonoperative measures, how much more likely is it that patients unhampered physically and mentally by distressing exophthalmos and goitre recover health, happiness, and usefulness, without the knife. Indeed, such patients may be discharged from nonoperative treatment a few months sooner than those with socalled typical Graves's disease.

In view of the still existing differences of opinion in many quarters regarding the management of Graves's disease, the mention of the following guiding principles in the nonoperative treatment is timely:

1. An earnest attempt must be made to ferret out and remove all discoverable etiological factors, whether intrinsic or extrinsic. Though I believe too much emphasis is placed upon infectious foci in the pathogenesis of this disease, these, of course, must always be corrected. I find that in many patients there exists a dominating psychological or sociological error urgently calling for adjustment.
2. Rest in bed is important, but unless serious cardiac lesions exist, a complete stay in bed rests neither body nor mind. A respite from bed of at least three hours morning and afternoon is highly desirable in the average patient.
3. Briefly stated, the diet must be of nonflesh quality and of ample quantity. As a rule a sufferer from Graves's disease should be urged to consume twice as much food as is taken under normal conditions. The gastrointestinal difficulties frequently encountered must be promptly overcome by all means at our disposal, for a good digestion is a most useful ally in this disease.
4. Drugs may be employed only after careful individualization. There is no specific drug for this disease, and even quinine, though harmless, is found useless in some patients. Circulatory, nervous, gastrointestinal, renal, and other symptoms must be managed according to indications, as viewed through the medium of experience. The quinine salts, corpus luteum, posterior pituitary, suprarenal cortex, arsenic, luminal, and the iodides in small doses are a few of the substances which have their field of

[1]The heart rate may be normal or below normal, and the skin may be dry in those instances in which there is a combination of inactive Graves's disease with hypothyroidism or in cases of exhausted or so-called "burned out" thyroid with signs of myxedema. These are not active cases of Graves's disease as above designated.

usefulness. On the other hand, it is of utmost importance to know what not to give; in this category are included such substances as thyroid extract, suprarenal medulla, the opiates, the iodides in large doses, and digitalis. However, digitalis may be employed in a still persisting heart hurry during convalescence.

5. Electricity, occasionally useful, is not a mainstay, but at best a supplement to other appropriate measures. Here, too, careful individualization must be exercised.

6. Psychotherapy in Graves's disease is of utmost importance. These patients have been lacking in mental tranquillity for a long time, and this lack is frequently an etiological factor. If psychic harmony be procured, the most stubborn obstacle to recovery is removed. The doctor himself plays his part in the achievement of the necessary mental adjustment. A grave attitude in Graves's disease is inimical to success. In patients who still possess recuperative powers, who are not insane, and in whom unequivocal cooperation in treatment is obtainable, the properly equipped internist is capable of effecting complete recovery within from six to eighteen months.

CONCLUSIONS

1. Increased basal metabolism, afebrile heart hurry, emotionalism, tremor, dermographia, and relative immunity to cinchonism are the most reliable evidences of active Graves's disease.

2. Since exophthalmos and goitre are not essential to the diagnosis of Graves's disease, the term exophthalmic goitre is misleading and should be discarded.

3. Patients without exophthalmos and goitre do not present the physiognomy of frozen fright, and recover more promptly under treatment than those presenting these signs.

4. Graves's disease is curable by nonsurgical means.

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The Endocrinological Aspect of Dermatology*

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In the pathogenesis of dermatological conditions there are numerous indications that many of them are due to disturbances within the system. Even the reaction of the skin to external irritants is dependent upon changes within the system. For example, chromophytosis can only be grafted upon a skin that has a special susceptibility for it. Blastomycosis is more common in patients with high blood sugar. There is an individual susceptibility to poison ivy as well as to dermatitis from other causes. These changes are both nutritional and metabolic, chemical changes within the system and endocrine disturbances.

The popular belief that overfeeding with acids and condiments has something to do with causing certain diseases of the skin is clinically correct. It causes a disturbance of calcium metabolism and hyperacidity. The latter is known to be responsible for rosacea and herpes labialis. A diminution of the calcium content of the blood has been found to be a nearly constant accompaniment of a certain group of leg ulcers. As the parathyroids have been held responsible for the regulation of calcium metabolism, attempts have been made to treat these cases with extracts of the latter glands. The results were more than gratifying. It is interesting to note that feeding these patients with calcium salts has no influence upon the course of the disease.

Pruritus and eczema may accompany diabetes and nephritis or there may be evidence of a disturbance in kidney function without apparent kidney lesions. This will show itself in an increased chloride content and in nitrogen retention. The lesions in diabetes are most frequently located in the region of the genitals and the anus. They readily respond to diabetic diet and to insulin medication. In some of the above mentioned diseases, as well as in urticaria, uricemia is found. This disturbance in purin metabolism appears, according to the hypothesis of Abel and supported by many investigators in metabolism, to have a relation to the vegetative nervous system. These cases respond to combined atropine and cinchophen treatment. Other cases of eczema, pruritus, and urticaria are dependent upon vagotonus. They occur in patients with symptoms of the socalled vagotonic syndrome, such as asthma, hay fever, chronic conjunctivitis, and bradycardia. Hyperglycemia is usually present. The lesions, as well as the hyperglycemia, clear up under atropine. Certain eczemas occur in either the very thin or the very fat individual. In the adipose, the condition may depend upon either the thyroid or the pituitary. They can be differentiated by calculating the combustion coefficient. While basal metabolism is increased in hyperthyroidism and diminished in hypothyroidism, it remains within normal limits in pituitary dysfunction. Many of these cases are due to protein anaphylaxis. The manner in which the latter is linked with the endocrines is as yet not well understood. The instantaneous response of the exudative lesions, as well as attacks of asthma, to adrenalin injections easily links it with the vegetative nervous system.

There are numerous other dermatoses which are frequently found in patients with endocrine disturbances and are favorably influenced by treatment with extracts of the various glands. Even psoriasis has been successfully treated with stimulating doses of x rays applied to the thymus gland. Usually, a week after the first application, the lesions begin to

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itch. This is supposed to be due to freshly secreted thymic hormone. Gavalefsky (1) claims success in sixty-five per cent. of his cases so treated. I have seen good results from this method of treatment both in Zumbusch's clinic at Munich and in my own practice. However, I have also seen recurrences after it.

There is justification in the general belief that dermatoses may be due to disturbances of puberty and the sex organs. Itching of the skin is given as a first sign of pregnancy. Itching of the genitals at various periods of life is known to all. So are the eruptions occurring during the life changes and their disappearance with the establishment of puberty. Even purely exogenous dermatoses may occur at certain periods of life and disappear under certain variations in the economy of the individual. Microsporon always heals sponaneously with the establishment of puberty.

Acne invariably begins with the onset of puberty and, with very few exceptions, disappears with its termination. There are characteristic hair changes in this condition. In the male, the beard is scant, the facial appearance often resembling castration eunuchoidism. In the female, on the other hand, there is a luxuriant growth of hair, often amounting to an actual beard. There is no basis for the belief that this disease is due to sexual abstinence. In acne, the latter is due to a diminished sexual appetite which usually accompanies it.

The three symptoms enumerated above—the appearance of the disease at puberty, the hair changes, and the diminished sex appetite—are dependent upon the gonads and their regulating glands, the thymus, the pituitary, and the thyroid. The extreme frequency of hyperglycemia in pustular acne also points to an endocrine origin of this condition. In spite of all that was said, not all cases of acne respond to endocrine treatment. The greatest enthusiasts (2) report less than fifty per cent. cures. I must confess that I was not as fortunate in my cases and had to resort to x ray treatment to clear up the lesions. This, however, is followed by endocrine treatment, whenever it seems indicated, with the hope of preventing recurrences. Pick (2) reports an interesting case in a patient with a bad acne in whom the disease completely disappeared after marriage at the age of twenty-six only to reappear when he became a widower at thirty-eight. This would make it appear that abstinence may be an influencing factor in the causation of acne.

The skin symptoms of gonadal dysfunction are as follows: There is a very fine infantile skin in the male and an atrophy from lowered activity of the glands in old age. It causes a thinning of the hair in the male and hypertrichosis in the female. The same occurs in a more marked degree after surgical removal. Most of the cases of hypertrichosis occur in unmarried women. It would appear that normal sexual life inhibits this condition. In one hundred and forty-six cases reported by Bechet (3), one hundred and thirty-one patients had more or less severe menstrual disturbances. In hypertrichosis, the ovaries do not act alone, there is a correlation between them and the pituitary, pineal, and the suprarenals. This is true of most of the conditions due to endocrine dysfunction.

Dermatitis dysmenorrheica symmetrica is a distinctly bilateral and symmetrical disease occuring only in women with complete amenorrhea, in those with a very scanty flow, and when the intervals are unduly prolonged. It is usually associated with hysteria. It is caused by a decomposition of ovarian protein within the ovary. This is demonstrated by a positive Abderhalden reaction for ovarian protein. The circulation in the blood of a certain lipoidal toxin is caused thereby. The latter can be demonstrated by the method of Hermann and Neuman (4). It is constantly found in the pregnant, after castration, in the climacterium, also in women with badly functioning ovaries. Polland (5) and other observers found this lipoid in all their cases of dermatitis dysmenorrheica. Geber (6) sensitized patients with the blood from women with that eruption and then injected blood from menstruating women and caused the disease to appear, proving the presence of a toxic substance in the blood of the latter. Dermatitis gravidarum, a disease which so often taxes the wits of the gynecologist, has the same origin and pathology, namely, urticaria with necrosis. These cases are very favorably influenced by treatment with ovarian extract. Kreibich (7) reports two interesting cases. One in a girl who manifested the disease at the age of ten and had complete amenorrhea at twenty-two. The other case was in a man in whom the disease developed after castration.

There is a comparatively large group of pathological changes in the skin which are known to be due to thyroid dysfunction. Those found in hyperfunction are marked hyperhydrosis, especially of the axillæ, transient erythemas, urticaria, prurigo, pruritus, melanosis, chronic alopecia, hyperkeratosis, and dystrophy of the nails. In hypothyroidism, there is a falling of the hair or it may remain sparse and undeveloped. I have two cases on record of total alopecia in children with mild symptoms of cretinism, in which the alopecia was cured in the course of several weeks by small doses of thyroid extract. One case occurred in an Italian girl of fifteen who as yet had not menstruated and presented mild symptoms of cretinism. The alopecia disappeared rapidly under treatment with thyroid, pituitary, and ovarian extract. She was completely amenorrheic, however, three years later in spite of continued treatment.

In myxedema, the clinically swollen skin is due to profound pathological changes. The cutis is atrophied, the elastic fibres are swollen, the collagenous bundles become attenuated and almost disappear. Both these structures become converted into an homogeneous mass, similar to the substance found in the thyroid. There is an obliterating endarteritis and occlusion of the lumen of the glands.

A number of cases of skin dystrophy and atrophy are apparently due to improperly functioning thyroids. Some of the socalled idiopathic atrophies, cutis verticis gyrata, ichthyosis and ichthyosis hystrix have occasionally been found in patients with thyroid dysfunction and have been benefitted by thyroid therapy. Lipodystrophia progressiva, in which the fat from the subcutaneous tissue of the upper part of the body completely disappears, the process end-

ing at the crest of the illium, and Dercum's disease, with its accompanying ulcerations, and occasional bullæ and other trophic disturbances of the skin, belong in this group. While Price (9) found pathological changes in the thyroid in five out of six cases of the latter disease, other observers believe that the fault lies in pituitary dysfunction. In scleroderma, there is an atrophy of the papillæ, a conversion of both the elastic tissue and the collagen into an homogeneous hyaline mass and an accompanying obliterating endarteritis. This disease is recognized to be due to thyroid dysfunction.

Gerson (10) found a vagotonia in all of his cases. As he found no means of reducing it, he attempted to raise the sympathetic tone in order to produce equalization. In this manner, he asserts that he has cured all his cases in a few months. Many reports of cures of scleroderma with thyroid extract are on record. The opposite conditions prevail in multiple neurotic gangrene of the skin. This disease starts with an area of hyperesthesia. This soon becomes red, a wheal like eminence develops, and a mild necrosis occurs in the centre. In most of these cases, pronounced symptoms of hyperthyroidism are present. The presence of sympathicotonus is constant and frequently there is hysteria associated with it. Sclarz (11) cured several cases of this disease with antithyroidin. Some cases were cured by pilocarpine. The object in giving this drug was to raise the tone of the vagus to equalize the sympathetic hypertonus. Pavlovic (12) reports two cases of ichthyosis cured in the same manner.

In hyperpituitarism there is hypertrichosis, an increased size of the hair follicles, and an enlargement and activation of the secretory glands causing a moist and greasy skin. There is an hypertrophy of the papillæ, an increased prominence of the furrows of the hands and feet, and an increase of the connective tissue of the subcutis, giving the skin a dense and boggy feel. In hypopituitarism there is a thinning of the hair of the scalp in the adult. It becomes dry and strawlike. There is falling of the axillary and pubic hair and there is a feminine distribution of the latter in the male. The skin is smooth and transparent, almost infantile in character. It is dry and deficient in perspiration. Dystrophia adiposogenitalis presents many of the symptoms mentioned above and is a disease due to pituitary hypofunction. Several cases of Raynaud's disease were successfully treated with pituitary extract and cases of Recklinghausen's disease associated with hypopituitarism and acromegaly are on record. In the latter disease, hyperpigmentation is frequently present. There are cases on record of that disease occurring in patients with hypoadrenia and tuberculosis of the adrenals.

The most important cutaneous expression of suprarenal hypofunction is pigmentation. In Addison's disease it is usually a later manifestation, although it sometimes precedes all other symptoms. In a case reported by Greenow (13) it preceded the disease by eight years. It is most marked in the areas that are normally pigmented, notably the areolas of the nipples, the scrotum, groin, extensor surfaces of the forearms, and the axillæ; also in the exposed regions, as for example the face, neck, and back of the hands. It is found on the mucous membrane of the tongue, inner surfaces of the cheeks, and on the gums. It is usually absent on the palms and soles. The pigmented patches are diffuse, without any sharp margin. Occasionally, however, small molelike patches and specks, as black as ink, are scattered all over the body.

Adrenotropism or melanotropism is a condition in which there is pigmentation similar to that present in Addison's disease, but without any other symptoms of hypoadrenia. The hair is coarse and inelastic and is very poor in natural oil. Its color is usually darker than is usual with the nationality to which the patient belongs. In Addison's disease, the hair occasionally turns black. Hyperpigmentation in chloasma, acanthosis nigricans, and perhaps also in secondary lues may be due to the same cause, namely adrenal insufficiency. The same may be said about the pigmentation which accompanies tuberculosis.

THEORY OF PIGMENT FORMATION.

There is an increase in physiological pigmentation due to the influence of a faulty sympathetic nervous system. This theory holds that the pigmentary changes are not due to the adrenals themselves, but to lesions or an irritation of the pericapsular nerve apparatus which presides over the pigment function. The presence of a similar melanoderma in patients with tuberculosis, especially of the peritoneum or the intestines seems to speak for it. There is an increased number of chromatophores and melanoblasts in the skin. The latter cells are supposed to be under the influence of the sympathetic nervous system. The reason for this belief is that during early embryonic life, these cells are supposed to be wandering neuroblasts. Some of them go to form the sympathetic ganglia and the visceral sympathetics. Others do not develop into nerve cells, but retain their original form and present a peculiar affinity for chromic acid. Hence they are called chromaffin cells. They are supposed to be identical with the chromaffin cells of the adrenals. There are no chromoblasts in the cutis. The pigment cells in the latter location are chromatophores or pigment carriers. Miescher (14) believes that these cells are ordinary fibroblasts which have taken up pigment derived from the cells of the epidermis. The latter give up their pigment when it is excessively formed or when pathological changes take place within the cells. For that reason, chromatophores are abundantly present in the cutis in the region of a patch of vitiligo. Miescher was able to prove experimentally that connective tissue cells have the power of absorbing substances from the tissue fluids and store them. He was able to produce artificially chromatophores by injecting melanin into the skin. As a further proof that the pigment cells of the cutis are not melanoblasts or pigment builders can be mentioned the fact that they do not contain any oxydase. This was sufficiently demonstrated by Bloch (15), who found a negative Dopaoxydase reaction in the cutis in all of a large number of specimens examined.

Side by side with the pigment in the epithelial cells of the skin, there is another substance from which the pigment is formed. Both these substances have the power of reducing silver nitrate. The invisible prepigmentary substance can be demonstrated as it assumes a dark brown color, the same as mela-

nin. Some hold that this substance is derived from tyrosin and allied substances which are derived from the decomposition of proteins and are precursors of adrenalin. In Addison's disease, adrenalin is not sufficiently formed. The above mentioned substances accumulate in the tissues and in the skin, and are converted by oxydase into a dark pigment belonging to the melanin group. Oxydase can be demonstrated in the basal layer and in the lower two layers of the stratum Malpighii by a process known as Bloch's Dopa reaction. When a piece of skin is kept in a solution of dioxyphenylalanin for a certain length of time, the cells containing oxydase turn a uniform black. This reaction differs from the silver nitrate reaction in that that in the latter the color is brown and is confined to the pigmentary and prepigmentary granules. On staining with dioxyphenylalanin, a number of cells in the basal layer are seen to possess tendril like projections. These are the melanoblasts.

The skin is capable of taking up some of the work of the adrenals. This is evident from the fact that extracts made from skin substance, when injected into the blood is capable of raising the blood pressure. The same happens when the skin is exposed to ultraviolet light. The latter rays do not penetrate beyond the uppermost layers of the skin and, therefore, it is likely that this action is primarily a local one, on the skin structures themselves. When the adrenals are exhausted, there is a great overactivity of the skin. This also causes melanosis.

Vitiligo is frequently associated with Addison's disease, also with Recklinghausen's disease and very often with alopecia areata. The fact that vitiligo and alopecia areata so often go together brings to one's mind the question whether absence of oxydase has not anything to do with causing both of these conditions. Such a viewpoint is strengthened by the fact that the rays from the quartz mercury lamp, so effective in alopecia areata, also stimulate oxydase formation. The latter substance is completely absent in a patch of vitiligo. Both of these diseases are frequent in patients with hyperthyroidism and after the removal of the ovary. Arton (16) cured a number of cases of vitiligo by injecting large doses of ovarian extract. Bearing in mind the helplessness of the dermatologists in this group of cases, the reported cures with endocrine treatment appears significant.

Alopecia, after influenza and other febrile conditions, is supposed to be due to adrenal exhaustion which is always present. The marked sympathetic irritability and the vasomotor disturbances accompanying hypoadrenia causes a disturbance in the nutrition of the hair roots. Good results have been obtained in these cases from treatment with adrenalin and atropin.

Chatellier (17) cured a case of erythromelalgia with adrenalin injections. He believes that it is due to a vasomotor neurosis of endocrine origin.

Patients with diabetes are susceptible to pruritus and eczematous dermatoses, especially of the genital and anal region, also various erythemas, seborrheal dermatitis, furuncles, carbuncles, and other pustular dermatoses. These conditions also occur in all other diseases in which there is a high blood sugar. Other skin conditions frequently found in diabetics are xeroderma, bronzing and gangrene. Xanthoma tuberosum is a disease in which yellowish tumors appear in the skin. These are caused by an infiltration of the cells of the cutis with cholesterin. There is a constant cholestrinemia present. It is very frequently associated with diabetes (xanthoma diabeticorum) and is due to a disturbance of metabolism due to dysfunction of the pancreas. Engman and Weiss (18) cured a case of xantoma diabeticorum with insulin injection. This would make it appear that the latter substance is not simply a sugar burner, as it is taught by some, but has a complex function.

In conclusion, many other dermatoses could be mentioned which are frequently found in patients with endocrine disturbances and are occasionally benefitted by endocrine treatment. The subject of the correlation of the endocrine glands, however, is at present but little understood. While the identical pathological skin condition is found in patients with disturbances of various and even opposing groups of glands, diverse skin conditions are found in disturbances of apparently a single gland. This, however, is true of the entire field of dermatology. Various etiological factors may produce lesions of identical pathology, while numerous and diversified pathological changes may be brought about by a single etiologic factor.

The author's references will appear in his reprints.

Acromegaly Associated with Adrenal Tumor

By HERBERT W. LONG, M.D.,
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Case.—The patient was under observation at St. Michael's Hospital six months before he died. He was forty-five years of age and had suffered from pain in the feet and hands about four months. On admission, the hands, forearms, feet and legs were swollen. They increased progressively in size, became pigmented and boggy; and the skin became thickened, wrinkled and dry. The diagnosis of acromegaly was apparent. Signs of lung tumors were not present on admission, only scattered râles over the posterior chest; but signs of consolidation finally developed in the left posterior and right anterior chest. The x ray showed tumors of these parts and also a generalized osteitis and periosteitis with a large amount of new bone formation in the bones of the skull, tibia, etc. The temperature ranged from 96° to 101°, being subnormal several days before death. The pulse rate was 60 to 80. The urine, sputum and blood were negative except for a progressive anemia. Two weeks before death, the

FIG. 1. — Photograph of patient showing enlargement and pigmentation of hands and legs.

hemoglobin was sixty per cent. and the erythrocytes numbered 3,400,000.

At autopsy, the skull was thickened, the frontal sinuses were greatly enlarged, the sella turcica measured five by eleven by eighteen mm. (normal) and the pituitary showed no gross lesions. A degenerated tumor replaced the lower left lobe of the lungs and a smaller tumor involved the right lower lobe. The spleen weighed 410 gm.; the liver 1900 gm.; the right kidney, 210 gm.; and the left, 240 gm. A tumor, forty gm. in weight, involved the left suprarenal; and a large hemorrhagic degenerated tumor weighing 1,000 gm. replaced the right suprarenal. The periosteal shell of the tibia was six mm. in thickness.

Microscopically, the right adrenal tumor was chiefly necrotic and hemorrhagic, but with neoplastic tissue sufficient for diagnosis. The cells of this and of the left adrenal growth varied in size and shape with many giant cells and mitotic forms. There were many undifferentiated ovoid or polyhedral cells with large hyperchromatic nuclei; and also some cells with a large amount of clear cytoplasm, as seen in hypernephroma, which characterized these as adrenal tumors. The lung tumors were more typically adrenal than those of the suprarenals, practically all of the cells here showing a large amount of clear cytoplasm. These new growths were metastases from the adrenal tumors by way of the renal vein, vena cava, right heart and pulmonary artery. The spleen, more than twice the normal size, was fibrous, representing a part of the general

FIG. 2.—Autopsy specimens; upper, lung tumors; middle, periosteal thickening of tibia; lower, right suprarenal tumor.

visceral hypertrophy of acromegaly. Bone sections showed a productive osteitis and periosteitis. The pituitary, though not grossly enlarged and symmetrical, showed definite pathological changes in the glandular portion. The normal gland contains two main classes of cells: chromophile and chromophobe. The chromophile cells are either acidophile or basophile. There was in this pituitary an overgrowth of both eosinophilic and chromophobic epithelial cells, the former predominating and forming solid cords and compact groups of atypical epithelium without mitosis. Cords invaded the pars nervosa. Acini filled with colloid substance were present, derived from the pars intermedia.

FIG. 3.—Microphotograph of the lung tumor. The large amount of clear cytoplasm shown in these cells indicate its adrenal origin.

Whether this growth of the pituitary causing acromegaly was the result of deficient adrenal secretion from tumor formation there, or whether the growth in the pituitary caused adrenal hypertrophy with resultant carcinomatous change, is not clear. Rare cases of adrenal hyperplasia reaching an almost adenomatous grade have been reported complicating acromegaly. On the other hand, hyperplasia of the pituitary is normally associated with pregnancy as a result of deficient ovarian secretion, and cases of tumor and acromegaly have been reported following repeated frequent pregnancy. It is also possible that deficient adrenal secretion might have upset the polyglandular equilibrium, and thus produced the pituitary change. Therefore, even though no positive etiological deductions can be made from the report of this case, it shows that the relation of the suprarenals to acromegaly in their relation to the pituitary deserves further study.

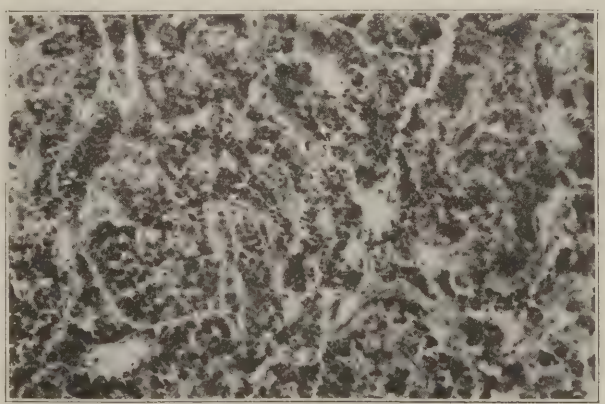

FIG. 4.—Microphotograph of the pituitary growth showing the deeply stained epithelial groups (chiefly chromophilic cells).

Historical Medicine

A Note on Dr. Maynwaringe's Idea of the Infectivity of Phthisis in 1673

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The period following the discovery of the circulation of the blood by Harvey seems to have been a time of great mental, as well as of physical and governmental activity. It was in the latter half of the seventeenth century that the Royal Society was established by the Hon. Robert Boyle with a large number of medical men. The discovery of the circulation of the blood, like all great discoveries, had a marked effect on all the great thinkers of that period, inducing some nonmedical men like Boyle and Christopher Wren, to take an active interest in such matters as the transfusion of blood and the injecting of medicated liquors into the veins.

Much of the medical writing of that period is of very great interest and well worthy of being perused even for socalled fresh or modern ideas. A few months ago I drew attention in *Nature* to the fact that the sinoauricular node and fibrillation had both been discussed in 1648 on the strength of some interesting vivisection experiments on the dog by Johannes Walæus, professor of medicine at Leyden University.

Walæus's work was published in the form of two epistles constituting an appendix to Bartholini's *Anatomy,* published in 1650. A few years later a very interesting book was published by E. Maynwaringe, Doctor in Physick, on *The History and Mystery of the Venereal Lues or French Disease,* and in it is a reference to tubercle, which is as follows:

"And as for *phthisis,* why that should be infectious to the lungs of another, there is good reason for it; because the corrupt breath going out of the phthisical person is drawn and received by another (in their near approaches) and coming into the *aspera arteria* of the sound person, is by that canale immediately conveighed through various ramifications into the whole *parenchyma* of the lungs, which being totally pervious, and of a spongious substance, is very susceptible and obnoxious to alterations from the quality of the inspired air."

"And having imbibed *phthisical* corruptive *miasms* in the breath may lodge and fix there, changing the natural tone of the lungs into a *tabid* and *corruptive* state.

"In the next place we are to consider what these miasms or infectious seminaries are that pass from body to body. Some give them the denomination of *vapour,* others a *spirit,* from their subtility and penetration, not that they are void of *corporiety;* but we shall not trouble ourselves upon the name, provided we rightly know what is meant thereby. We are therefore to understand them as *corpuscles* or subtile invisible bodies which are minute small portions exhaling from infected bodies of the same nature and taint, as the bodies from which they are emitted. These venemous *particles* of contagious matter are agile and penetrating, so that they insinuate themselves through the pores of other bodies; and being entered do there ferment and operate to alter and change their new receptacles and tincture them with the like *tabes* of their own virulent nature."

The lines quoted above were written two hundred and fifty years ago and, considering the clearness of thought expressed by Maynwaringe, it is very remarkable that so little progress of a fundamental nature has been recorded since then.

Even at that time there were evidently a large number of nonreasoning members of the profession for he tells us that "Physicians have laboured to find out rational ways of cure, answering their several opinions and determinations of this lues. Empericks, not being capacitated to dive into the abstrusity of this disease, nor willing to spend time about the *notional* part wherein they find no *gain,* fall presently upon the *practice,* consulting only or rather at a venture, *borrowing* from tradition a method of cure which boldly they experiment upon all persons, and whether it hit or miss, are not able to give an account or reason for either."

To what extent have we advanced today? "But," as Maynwaringe states in conclusion, *"populus vult decipi,* they love the imposture, they will not be informed, so let it go on."

61 Waller Road.

The First Scientific Work on Spectacles.—Dr. Casey A. Wood (*Annals of Medical History,* June, 1921), says that this small octavo volume by Benito Daca de Valdez was published at Seville in 1623. It is an extremely rare work, only ten known copies being in existence—one in the library of the Surgeon General in Washington, one in the British Museum, and the remaining eight in Spain. The title page tells us that the subject of the book is the use of spectacles for every kind of sight, with lessons on the varieties of visual defects for those needing a special kind of spectacles. It indicates the time of life when certain lenses are most useful, how these may be prescribed, and discusses other ways of preserving eyesight.

The author was a notary of the Holy Office (Inquisition) in Seville, and he dedicates his work to our Lady of the Holy Fountain of the City of Cordova, about whose appearance in Cordova a friend of the writer contributes a prefatory poetic "romance." The manuscript was censored and approved by the Church, and the published work censored and approved by the State, by which the book was licensed for ten years. The price was

fixed by the State at what corresponds to about thirty cents. "This seems a fair price when one considers that the purchasing power of early seventeenth century Spanish money was about ten times that of present day currency."

The book proper begins with the dedication to the Benign Virgin, followed by an introduction, then comes the romance, then another introduction, and finally the body of the work, divided into three books, the first and second dealing with the anatomy of the eye and the physiology of eyesight, and the last consisting of four curious and interesting dialogues between teachers and pupils on practically the whole subject of physiological optics as it was known at that time.

One chapter of Book I deals with imperfect vision due to congenital and acquired conditions, another describes the great benefits of properly fitting glasses. There are treatises on the socalled depraved eyesight of old age, shortsightedness in infants, acquired poor vision and its causes and remedies, anisometropia, and a discussion of shortsighted and farsighted persons. Book II treats for the most part of the provision of lenses for the relief of defective vision, and opens with a discourse on the invention of spectacles, followed by descriptions of various kinds of glasses, of concave, convex and plane lenses, and of protective glasses. Later the numeration of lenses is discussed, a portion of the book of the greatest interest to the ophthalmologist. The size of the prescribed lenses is considered, and the means by which the strength of both concave and convex glasses may be recognized through testing the focal distance of each lens by "a person with perfect sight."

An account of the principal methods of determining the refraction follows, calling attention to the decided difference between congenital and acquired visual defects. "Ordering glasses for the relief of presbyopia in the Spain of 1622 was quite as satisfactory and efficient a process as that adopted nowadays by jewelers' shops and department stores. If the patient was at hand, the following rules obtained; for a man between thirty and forty years of age, a convex glass of two degrees is required; between forty and fifty, two and a half degrees; between fifty and sixty, three degrees; sixty and seventy, three and a half degrees; seventy and eighty, four degrees; after that period, five or even six degrees." The degree closely approximated our diopter. For some unknown reason, Valdez believed that women required somewhat stronger presbyopic lenses than men. He found the former more delicate and with weaker vision.

The dialogues treat not only of the subject of optics, but include discussions of many medical subjects, and of the relation of religion to physiology. The first conference is about short, weak, or injured eyesight; the second, unusual forms of defective, confused, and unequal vision; the third, cases of incomplete correction of visual defects by glasses, and difficulties experienced by patients in wearing glasses; and the fourth is about what we would call opera glasses—small telescopes then used for seeing at a distance.

"The actual procedure in choosing reading glasses described by Valdez," writes Dr. Wood, "does not essentially differ from certain methods much employed in the present day, except that the Master several times insists that glasses are not curealls—thus coming directly in conflict with some of our modern ophthalmologists—and that the state of the visual apparatus itself (its diseases for instance) and the condition of the general health should always be borne in mind, a contention that raises him miles above the refractionists of the department store or even of the optometrical variety." Valdez was opposed to the use of the monocle as making the eyes unequal. He knew well the use of stenopaic lenses. He counsels that in ordering glasses for myopes, these must not diminish the apparent size of the object, nor must the purchaser choose glasses so strong that they pain or tire the eyes—it is far better to wear lenses that do not afford the most perfect vision in the distance, since they are more comfortable and are not a strain upon the eyesight. In Valdez's time, protective glasses were made in all the colors prevailing today—light yellow, dark yellow, red, green and blue.

Seventeenth Century Therapeutics.—An article in a recent issue of the New York *Tribune* describes in part the contents of a medical book published in 1669 which was once the property of William Penn. The volume has recently been given to the Philadelphia College of Pharmacy and Science. The title of the book is *Chemical Dispensatory,* and some of its prescriptions are unique in the history of medicine. It states that "plants that represent the part of man afflicted are wholesome." For instance, walnuts, chestnuts, etc., having heads, are good for disorders of the head; likewise, the eating of liver cures liver trouble, kidney beans are good for kidney troubles, and plants with swellings relieve tumors. A cure for socalled melancholy was a live pigeon cut into and laid on the head while the blood was still warm. Another cure was made of rubies, either drunk or hung around the neck. This would protect also against the plague, evil dreams, frightful thoughts, and keep the baby safe.

The bloodthirstiness of some of the remedies is startling. The most drastic prescription calls for "the blood of a young man taken in May." If this were not available, goat's blood could be substituted, "the goat being a cheerful creature, swift, proud, quick of hearing, and ravenous." Similar qualifications were not apparently demanded of the young man. Another prescription requires "the carcus of a redhaired man, whose blood is thinned and flesh therefore better, whole and sound, twenty-four years old, not dying of disease, but killed." What ailment this cures is not stated. Dr. Julius W. Sturmer, dean of science in the Philadelphia College of Pharmacy and Science, is quoted as saying that this bloody remedy probably originated many years before the book was written. Redhaired persons were rare in southern Europe, particularly among the Romans. Lighthaired men, therefore, were always conspicuous, and usually from the Northern tribes, hence barbarians or slaves or captives, and not in the eyes of that period to be regarded as human beings.

Editorial Articles

GOITRE HEARTS

The subject of goitre and its treatment is of perennial interest to the medical man and of considerable concern to the public at large. There is a great deal of goitre in this country and the question of treatment, of course, varies somewhat. The shrewd physician and the keen surgeon do not, as a rule, see eye to eye with regard to treatment. The physician naturally believes in medical rather than surgical methods to effect improvement or cure, while the surgeon is likely to resort to operative measures at once with the same object in view. There are cases, however, in which there is no divergence of views as to treatment. Some are obviously medical, while others are just as patently surgical cases.

That there is a relationship between thyroid disease and the heart is an old belief, and one to which German writers, in particular, have drawn attention. It is an important point, for the reason that in certain cases such a connection should preclude operation and it is well to know what type of goitre hearts renders surgical methods risky or dangerous.

To this number of the JOURNAL Dr. S. Strickland Goodall contributes an article dealing with the matter at issue. He is one of the first authorities on the heart in Great Britain and has had much experience in this direction, and therefore his words may be considered to carry great weight. After pointing out that, roughly speaking, goitre hearts fall typically into two main groups, 1, pneumomechanical; and 2, thyrotoxic, he concludes that in the case of the pneumomechanical heart the operative risk is comparatively slight, mainly because it is not poisoned or degenerated, while in the case of the thyrotoxic heart, the risk is relatively high, because the heart is not only exhausted but poisoned and degenerated as well. Moreover, in both types, according to Goodall, recovery after operation is frequently incomplete, and in the thyrotoxic cases, as would be imagined, being slower by far than the pneumomechanical.

It is also pointed out that the most complex and difficult of all cardiac cases to assess, so far as goitre is concerned, are those in which the subject in early life manifested some such condition as rheumatic fever which definitely damaged the heart. It goes almost without saying that in cases of this nature it is practically impossible to determine how much of the damage is rheumatic and how much thyroid in origin.

Dr. Goodall's article is illuminative and suggestive and should be read closely and studied carefully. As said before he has had a wide experience. Dr. James Berry, who has operated for exophthalmic goitre more frequently than any other British surgeon, sends the majority of his cases to Dr. Goodall for cardioanalysis before operation.

It may be pertinent to inquire how often the thyroid is injured by toxemia of an intestinal origin. Some authorities have no hesitation in stating as their opinion that this is what happens in the majority of cases. It is also recognized or, perhaps, it may be wiser to say that such is the belief of many leading members of the profession, that rheumatism is largely caused by intestinal toxemia. Therefore it would seem that the heart is affected by both thyroid disease and rheumatism and in both instances, too, it is probable that the toxemia which causes the damage is of intestinal origin. Granted that this view is even partially correct, does it not supply another convincing proof of the validity of Sir James Mackenzie's contention that disease should be attacked in its beginnings and not allowed to develop? If, for example, intestinal toxemia were so dealt with that it is not allowed to develop, to put it mildly, there would not be nearly so much thyroid disease nor rheumatism and consequently fewer goitre heart and less cardiac damage from rheumatism, which is said to be the chief cause. By such simple means the prevalence of heart disease would be vastly diminished. Perhaps there are too many ifs in this editorial. At the same time the matter appears to be worth discussion.

THE ENDOCRINE GLANDS AND ARTHRITIS

The primary cause of arthritis is not known in spite of the contention of some that infection of the gums and teeth and oral sepsis generally are usually the origin. Belief in pyorrhea and infected tonsils and so on as the main causes of arthritis is not so active or prevalent as formerly. Indeed, it seems to be recognized now that oral sepsis as the source of many complaints, serious and slight, has been exaggerated. It was almost an obsession with some. But the pendulum is beginning to swing in another direction and the rôle of the mouth in the causation of disease is commencing to be estimated differently. The effect of endocrine derangement is at present being suggested as more likely to be responsible for arthritis and for dental caries as well. Broderick, who contributed a powerful original article to our last special number on endocrinology, said his re-

searches led him to believe that dental caries may be due to calcium hunger owing to disturbance of the normal balance of the endocrine glands. Probably of the parathyroid glands in particular, as it seems to be held by those who have investigated the subject that it is the parathyroid glands which control the calcium content of the body.

Llewellyn in the *Medical Press and Circular,* April 4th last, writing on the cause of arthritis declares that he feels certain, too, that in the imbalance of the endocrine glands resides the clue to the intermediate pathology of, at any rate, some forms of arthritis. Llewellyn pursues these interesting speculations further and points out that states of hyperthyroidism are frequently met with in association with arthritis and the victims of hyperthyroidism exhibit a lowered sugar tolerance and lowered sugar tolerance seems to be a metabolic disability common to both gouty and nongouty forms of arthritis. Summing up his arguments in favor of the hypothesis Llewellyn notices that psychic factors acting via the endocrine glands and exposure through depression of the oxidative functions of the blood may determine each in their several ways, a lowered sugar tolerance. He concludes that local infective foci, whether dental or other, are not the sole agents capable of initiating the chain of pathological events that eventuate in arthritis and with Pemberton, who has made close studies of the question recently, Llewellyn is strongly of the opinion that "it is safer and certainly more reasonable to believe that a variety of factors, many types of infection, exposure to cold and wet, chronic intestinal conditions, of which we have only imperfect knowledge, and possibly even less ponderable interglandular disturbances, may induce the substratum, partly illustrated by a lower sugar tolerance, which is shown to accompany this disease so closely."

Evidence is forthcoming daily of the immense influence over health exerted by the hormones and it appears that it is being emphasized more and more daily that glandular therapy will be the treatment of the future. The time for this is not yet. There is much to be learned with regard to the endocrine glands before the Utopia of glandular therapy is reached. There is a good deal of sifting wheat from the chaff to be done. But advance is being made and the outlook is hopeful. Another point which cannot fail to impress those who are following the trend of modern medicine is the realization of the effect of the mind over the body and vice versa.

Psychic factors have a profound influence upon the well being of the body. Mental shock or even more profoundly continuous anxiety or worry may bring on numerous diseases. Llewellyn says that these factors may determine the onset or exacerbation of arthritis, because through the medium of the endocrine glands, they induce a lowered sugar tolerance. In many directions our views as to the causes of disease and consequently of treatment are being revised and will be further revised and discoveries with respect to the functions of the endocrine glands and of advances in psychology have had much to do with our revised opinions. It may be affirmed that we are on the threshold of changes in the practice of medicine quite as revolutionary as those ushered in by the discovery of bacteriology.

THE RESPIRATION IN BASEDOW'S DISEASE.

The respiratory disturbances encountered in exophthalmic goitre are the consequence of the Basedow syndrome. They depend upon it entirely and are not the result of a rhinopharyngeal lesion or a concomitant pulmonary process. All subjects of this morbid process present a rather marked polypnea which increases upon exertion, usually in a mild degree. Thus reading aloud will slightly increase the number of respirations. On the other hand, more strenuous exercise is less well supported by the patient, causing an increase of the tachypnea. The latter is generally in direct ratio to the tachycardia, but the parallelism is not absolute and it may be said, in a general way, that the respiration is more stable than the pulse.

In general, the respiratory rhythm is regular; but occasionally it is irregular and jerky, during either inspiration or expiration, indicating a true respiratory trembling, a topographical modality of Basedow trembling, and, like it, susceptible of increase from fatigue or emotion. Thoracic amplification is below normal so that the respiratory index is low, even when one takes into consideration that women represent the largest number of cases. The same is true of diaphragmatic incursion which is diminished.

The voluntary apnea test shows that in Basedow's disease there is a considerable diminution of the possibility to suspend breathing, the average length of time being eighteen seconds, instead of fifty, which is normal. This reduced time indicates oxygen hunger in these subjects and contrasts with the length of voluntary apnea in myxedema.

Spirometric examination reveals a distinct decrease of respiratory capacity, while the study of respiratory debit with Pech's monometric apparatus shows that the maximum respiratory debit is greatly diminished, especially during expiration. This phenomenon accords with the results obtained from the study of the basal metabolism in exophthalmic goitre. Prodigal with their reserves, Basedow sub-

jects with considerably increased respiratory functions are in a state of permanent polypnea in order to repair the loss resulting from exaggerated consumption of oxygen, either in the tissues or in lungs. This fact is quite in accord with the disturbances of pulmonary ventilation described not long ago by Professor Achard.

The oculorespiratory reflex is usually positive in the vagotonic sense in the same sense as the oculocardiac reflex. However, there may be a dissociation of these two reflexes, a condition readily understood on account of the various responses given by the different oculovisceral reflexes. Compression of the eyeballs acts on the respiratory debit in general, especially on the expiratory debit.

BUNK, ESPECIALLY MEDICAL.

Slang is a great thing, a very human form of speech, apt, humorous and as a rule logical. Purists whose hearts have about as much of the milk of human understanding as a dried apple decry its use. To them, words in the making are an anathema. They approve only old, threadbare words, words which lack the zest and vigor of youth, which express an idea with ponderous dignity instead of crisp freshness. Yet many of these etymological outcasts can boast a distinguished lineage; boob is the old Spanish *Bobo,* a simpleton, and from the latter word we get the expressive simp. There is a short, pungent word which we Americans think is all our own, bunk, derived appropriately from the patronymic of an early member of the House of Representatives, one Colonel Buncombe. Really though, it came into the language with the Danish invasion, *bunke* in the Scandinavian tongues signifying anything which swells out, also, a heap. Thus it is seen that as used today bunk is not far away from its original meaning.

The word means pretension of what one is not, the assumption of what is not true, for the purposes of deceit. It carries with it the idea of swank, a perfectly good Scotch word which crept down from the north, something puffed out or padded out, a bombastic person. It is a particularly human quality, something to which most of us are given in little ways and a few have it as their outstanding characteristic. Its manifestations are protean, none of us likes to admit how really insignificant we are, even to ourselves, and so in some way or another we preen ourselves as peacocks, though we are but sparrows. Our magazines are full of it. Big business teems with it. It is the daily bread of many professional men. Properly controlled it partakes of the quality of proper pride. In a more advanced stage it is ludicrous. It may reach the plane of the near criminal and it may even become so malignant that is destroys its victim. Its struttings and its posings are pitiful, its deceits may be malicious and it is altogether reprehensible, but it will amass great fortunes and continue to advance men to power until that millennium when all men will despise self-deception and therefore cease deceiving others. Those sparse hedges with which recent medical graduates used vainly to try to hide their youth were the first symptoms of the acquirement of the bunk habit. The owlish consultations in which the older physician pompously pronounced that "the treatment is progressing satisfactorily but," were another pathognomonic sign. The concealing of the simple drugs in halfcaste Latin, the designation of nosebleed as epistaxis, cold sores as herpes and a stye as hordeolum were part and parcel of this bunk.

It is upon this simple practice of the palpation and adjustment of the vertebræ of the spinal column with the hands for the purpose of releasing the prisoned impulse, that chiropractic "has made the most astonishing growth of any profession in the history of the world" to quote from a recent advertisement. That's quackery in somebody outside the profession of medicine, but when rest and a tonic are prescribed for the overwrought nerves of an overfed, underexercised representative of the idle rich by a member in good standing, why that's—well—just a little harmless bunk. Think of the drool to which the conscientious attender of medical societies has listened. Consider the bunk laden schemes by which the obstetrician, who was once gratified beyond measure by a twenty-five dollar fee, arrived at that proud pinnacle where no honorarium of less than five hundred dollars can be considered. Compute the millions of gallons of useless nostrums which have been poured down the willing gullets of the gullible public. Yes, in the language of a recent novel, "we need debunking."

But there is a saving clause to all of this. Many and many a physician is following his calling in mental uprightness and that pride which will not stoop to petty deceit, which will not cavil with the truth nor shirk the responsibility for not knowing what is the matter with the patient and how to relieve his present difficulty. The research branch of medicine is singularly free from bunk, yet there are times when the publication of long protocols about guineapig A-47 in nonresearch journals smacks strongly of the vice. The profession has time and again been led astray by some bunk method of treating sick bodies and warped souls but—and here lies the virtue—always after disillusionment it has sought the straight and narrow way of careful thinking there to expiate in the ashes and sackcloth of selfhumiliation the sin of following after

false gods. And after each incursion into these specious paths we have been purified and strengthened and those to whom we are servants have benefitted thereby.

A STUDY OF THE COFFEE QUESTION.

"The history of human experience, as well as the results of scientific experimentation, point to the fact that coffee is a beverage which, properly prepared and rightly used, gives comfort and inspiration, augments physical and mental activity, and may be regarded as the servant rather than as the destroyer of civilization." The foregoing is a quotation from a detailed report made by Prof. Samuel C. Prescott, head of the Department of Biology and Public Health of the Massachusetts Institute of Technology. A three years' study of the coffee problem has just been completed by the Institute, with Professor Prescott as director, the aim being to clear up many disputed questions and traditions regarding the composition of coffee, its physiological action, and the best way of preparing the beverage from the roasted bean. A summary of some of the outstanding statements of the report follows.

The statement is made that, after weighing the evidence, a dispassionate evaluation of the data surveyed led to no conclusions that coffee is injurious to the large majority of persons. It was found that, quite to the contrary, it has a remarkably stimulating and fatigue relieving effect, due to the action of the caffeine upon the central nervous system. Heart action is mildly stimulated, muscular capacity increased, and the ability to concentrate and mental activity stimulated. Coffee does not draw upon the physical reserves; nor does it have a depressive aftereffect. "The activity of the organism is speeded up for a time, then returns to the normal level. . . . The average cup of strong coffee contains about one and a half or one and three fourths grains of caffeine. This is ample, in some individuals, to give a quicker heartbeat, hence to increase the circulation, and activate more pronounced mental processes. Other individuals may require two to four times as much to provide the same degree of stimulation. If individuals are especially sensitive to tea or coffee, its use, except in extremely limited amount, is not to be recommended. In this respect, it should be treated in exactly the same manner as are many kinds of food, meat, shellfish, eggs, milk, or fruit which do not agree with one person or another. These food idiosyncrasies are now known to be not uncommon." The ability to take coffee clear, but not with cream, is due to inability to take care of the fat element. It was found also that there was some difference in result when pure caffeine was given in aqueous solution, and when given in the form of strong coffee containing equivalent amounts of caffeine. In general, the tolerance for the caffeine in the coffee was higher than that for the pure caffeine in the water. Speculation on the reasons for this, together with observations on the chemistry of caffeine, suggested that caffeine may exist in beverage coffee in a different form from that in the solution. Experiments were made on rabbits as to the desirable, tolerable, objectionable, and lethal results of caffeine, and it was found that the amount lethal to a rabbit depends upon the animal's body weight. Assuming the same caffeine tolerance per kilo in the case of man, it would require one hundred and fifty to two hundred cups of ordinarily strong coffee, taken at one sitting, to kill a man weighing 154 pounds. It is stated, however, that these figures cannot be taken as absolute. A surprising fact came to light, in that, after a study of a vast amount of the literature of several countries, no important information could be found on the best methods of preparing coffee.

PERFECT STANDARDS

Man has been seeking the ideal test of human perfection for a long, long time. The ancient Egyptians hit upon one by some mysterious process. They took the length of the middle finger as the unit, and standardized the head into so many finger lengths, the trunk into so many, the legs and the feet into so many, the breadth of shoulders in the same way. The Greek artists elaborated similar tests of physical perfection. Dürer and other great artists of the middle and later ages spent much time and effort in the same direction.

More strictly along health lines, the earlier enthusiasts in physical education in this country tried, by the study of measurements and tests of a large body of youth, to establish a standard to which they hoped, and more or less believed, all the rest of humanity could be approximated. Later, by adding, subtracting, multiplying or dividing various measurements, they tried to establish a vital index—a coefficient which would show, at a glance, just where a man stood with regard to physical function. These vital indices all proved to be will-o'-the-wisps.

The recent search for nutrition standards is, to a considerable extent, a repetition of this running after a hard and fast ideal, and the results are likely to be much the same. Not less than a dozen standards have been worked out in Europe and in this country. None of them agree; all approximate an average, but that is about as far as they get. After all, while weighing and measuring are a lesson and a stimulus to the person weighed and measured, we are not

justified in making of them more than they deserve. Variations from the average may not, on the whole, be good, but they occur normally and to a wide degree; moreover, variation has been at the bottom of evolution.

After all, are we not making too much of weighing and measuring, and not enough of malnutrition? The best and most farreaching practice would seem to be to see that a child is free from disease or hampering defect; that he receive a diet which contains all that he ought to have, in quantity as well as quality; that his feeding and other habits are what they should be; that he have ample rest and exercise and a normal mental atmosphere. Every child is deserving of these and under such conditions will reach his acme of growth and development, even if he falls more than ten per cent. below the average weight for his height, has a low *pelidisi,* an unsatisfactory Bernhardt index, or what not.

THE GARDEN CITIES OF RHEIMS

An interesting and successful experiment in building garden cities is being carried out in the vicinity of Rheims, according to *The World's Health.* The movement is not the result of the destruction wrought in the city by the war, for the plan was conceived originally before the war by a group of philanthropists with a view to raising the falling birth rate. For this purpose a capital of 1,250,000 francs had been collected and an anonymous society incorporated to provide housing at reasonable rates for "large families," including all those with a minimum of four children under sixteen. When the war broke out a number of houses had been built, but most of these were destroyed later by the bombardment. This blow did not discourage the enterprise, for, as soon as possible after peace had been declared, a plan for the construction of two garden cities, one of six hundred and the other of four hundred houses, was drawn up. These were to be located on the outskirts of Rheims. It was not until almost the beginning of 1921, however, that all the obstacles and difficulties to actual construction could be overcome. When the work was actually begun it went on rapidly. During the early part of the year five hundred tons of building materials were transported daily, and later fifteen hundred tons. The first garden city was completed in less than a year.

This city is now inhabited by 3,500 people, 2,200 of whom are children. It covers an area of about seventy-five square acres, each house occupying about sixty square yards, each garden about 360 square yards, and the remaining space being devoted to city squares and playgrounds. There are fifteen different types of houses, with lawns and gardens, and some have studios for the handicrafts, with the necessary equipment. There are also various shops and a community bakery.

Public health and child welfare activities are in full swing. A big building called the Children's House contains prenatal and baby welfare clinics, a milk station, a crèche and day nursery, and rooms for classes for the older children in housekeeping, cooking, sewing, laundry and other house crafts. Another big building has been named Everyman's House, and this, when completed, will be a kind of community club house, with a library, dispensary, recreation hall, rooms for meetings, gymnasium, baths, etc. A Roman Catholic Church is being built, and will be followed by one for Protestants, if enough come to live in the city. School buildings and an open air school have been planned. The garden city is located on high ground, and the windows of the homes command a lovely view of the surrounding hills and fields.

The rents for the homes are charged on a basis of the number of children in the family—the more children, the less rent—and the income from these suffices for the upkeep of the buildings and the street. The social welfare work is supported by private donations. Each month shows an average of three deaths to ten births.

SEX INSTRUCTION FOR CHILDREN

What Will You Tell Your Child, and How? is the title of a little pamphlet published by the Chicago Department of Health as No. 43 of its Weekly Bulletin. The writer is Dr. Herman N. Bundesen, Commissioner of Health of Chicago. The pamphlet has been prepared for the purpose of furnishing to parents, as the best teachers of sex matters to their children, information that will enable them to give instruction that will satisfy and guide the child's inquiring mind without unduly stimulating his curiosity about sex, and "so direct the child's sexual life and habits that he will be clean, wholesome, and will develop physically and mentally as nature intended he should." Although the writer states that his plan of instruction may be used, with a few changes and special adaptations, for girls as well as for boys, the boy's sex life is the one discussed. He announces that a more detailed discussion of methods of instruction for girls will follow.

The pamphlet is a practical little guide. The subject is taken up following the three periods of boyhood. The first period, from infancy up to eight years of age, requires facts best given by the mother on the care of the sex organs, and plain, truthful answers to questions from the child about the origin and renewal of life, adapted to his understanding. This period is sometimes called the age of mythology. The second period, from nine to fourteen, the age of chivalry, demands efforts from both parents toward the wholesome development of the boy's emotions

and imagination, with stress on the need of clean thoughts and healthy physical living. "He needs also the facts concerning the development of the generative organs, the normality and naturalness of seminal discharges, and advice on the control of the impulse of self-abuse." The third period, from fifteen on, is called the age of civic awakening. Now comes the father's turn to instill the principles of self control and chastity, the danger of sexual diseases, and the love of family life. "The preliminary instruction necessary for marriage, the meaning of marriage, fatherhood and motherhood, facts affecting the welfare of the individual, the nation, and the race, should be dealt with. The child should be warned that sexual intercourse before marriage may mean: 1, a bad habit; 2, venereal disease; 3, pregnancy of an innocent girl; 4, spoiling a girl's life; 5, breaking up homes and other matters. Much more detailed advice to parents follows this preliminary outline. At the end of the discussion is a rather full list of references for further reading.

News Items.

Infantile Paralysis Research.—The Harvard University Infantile Paralysis Commission has undertaken work to determine the cause of infantile paralysis and, if possible, a remedy. The research will be conducted at the Harvard Medical School.

Alumni Dinner of College of Physicians and Surgeons.—The class of 1898 of the College of Physicians and Surgeons of Columbia University held its twenty-fifth annual dinner at the Hotel Commodore. Seventy-nine members attended. Dr. T. S. Arbuthnot, of Pittsburgh, was toastmaster.

Senate Inquiry of Diploma Mill.—Investigation of socalled diploma mills was ordered by the Senate through adoption of a resolution introduced by Senator Copeland, M.D., of New York. The committee on education and labor, of which Senator Walsh, Idaho, is chairman, will have charge of the inquiry.

Instruction in Use of Insulin.—The University of Pennsylvania has started a third course of instruction in the use of insulin. Work started on December 17th and lectures and clinics will be given on Mondays, Tuesdays, Thursdays and Fridays from two to four and from four to five for laboratory work.

Montgomery Ward Memorial.—Northwestern University Medical School has received an endowment of $3,000,000 for a medical and dental school on the McKinlock Campus on Chicago Avenue. The donor, Mrs. Montgomery Ward, gives the money as a memorial to her husband and it will be known as the Montgomery Ward Memorial.

Obituary.—William Whitford, official medical stenographer for the state, district, county and international medical societies, died suddenly in Chicago on December 11th of myocarditis. Mr. Whitford was sixty-six years of age and was an honorary member of the Tennessee State Medical Society. A resolution commemorating him was passed by the board of trustees of the American Medical Association.

Rockefeller Foundation Elections.—At its regular December meeting, the Rockefeller Foundation elected to membership in its China Medical Board, Professor Paul Monroe, Teachers College, Columbia University, and to membership in its International Health Board, Dr. John G. FitzGerald, professor of hygiene and preventive medicine, and director of the Connaught Antitoxin Laboratories, at the University of Toronto.

Personals.—Dr. Walter Timme delivered a lecture on the automatic glandular mechanism, on Monday, December 17th, at the New School for Social Research, 469 West Twenty-third Street, New York.

Professor Robert A. Millikan, Ph.D., of the California Institute of Technology, Pasadena, recently was awarded the Nobel prize for physics. He has also been awarded the Hughes medal by the Royal Society of London, England.

Child Health Meeting.—A meeting for physicians and public health workers interested in child health particularly will be held at the New York Academy of Medicine on Thursday, January 3, 1924, at 8:30 p. m., under the auspices of the Public Health Committee of the Academy. The program follows: The principal problems of child health work in New York City, by E. H. Lewinski-Corwins, Ph.D., executive secretary of the committee; Standards of nutrition clinic, by Dr. Charles Hendee Smith; The safeguarding of the mental health of the child, by Dr. Arnold Gesell, M.D., professor of child hygiene, Yale University, and Community responsibility for child health, by George B. Vincent, Ph.D., president, Rockefeller Foundation.

Disabled Exservice Women to Be Admitted to Soldiers' Homes.—The Secretary of War has authorized announcement of the action of the board of managers of the National Home for Disabled Volunteer Soldiers, in making provision for admission to these homes of exservice women who have incurred disability. At a meeting of the board of managers held at Dayton, Ohio, September 14, 1923, a resolution was adopted to set aside a separate building at the Danville, Illinois, branch for the care of exservice women and for separate facilities to be made at the Northwestern Branch, Milwaukee, Wisconsin, for tuberculous patients. All women honorably discharged from any governmental war service are eligible for admission.

Ohio Botanical Society.—The Ohio Botanical Society organized for the establishment of a botanical garden in Cincinnati held its first general meeting on Friday evening, December 14. James Albert Green presided. Mr. Green presented an illustrated lecture on the great botanical gardens of the world, in place of Dr. Caswell A. Mayo, of the Wm. S. Merrell Company, who had prepared the lecture but who was suffering from ptomaine poisoning and therefore unable to be present. Mr. Green showed two hundred lantern slides, which included illustrations of the great botanical gardens of the world, and told of the educational work being carried on by the Brooklyn Botanical Garden as an excellent model of the kind of service such an institution could render to a city.

Foreign Correspondence.

LONDON LETTER

(From our own correspondent)

London, *November 9, 1923.*

NOBEL PRIZE FOR MEDICINE FOR 1922.

The Nobel Prize for Medicine for 1923 has been awarded to the Canadians Dr. F. G. Banting and Professor J. J. Macleod, of Toronto, for the discovery of insulin. The Nobel Prize for Medicine for 1922 has been divided between Professor Archibald V. Hill, professor of physiology at University College, London, and Professor Otto Meyerhof, professor of physiology at Kiel University. Professor Hill was unaware that his work had been considered, and had had no intimation of the award, when his wife who was glancing at the newspaper informed him of the honor bestowed upon him. Upon arriving at the college, Professor Hill found a telegram for him from the President of the Caroline Institute, Stockholm, informing him of the award. The fact that he shares it with Professor Meyerhof, has given peculiar personal pleasure to him, as they are close friends and both have been occupied with research work on muscular contraction. He took up the work in 1910, and with the exception of the years of war, has been engaged upon it ever since. Educated at Blundell's School, Tiverton, and Trinity College, Cambridge, Professor Hill was Third Wrangler in 1907.

It was Sir Walter Fletcher, now secretary of the Medical Research Council, his tutor at the university, who induced him to take up physiology, and Professor J. N. Langley, professor of physiology at Cambridge, who suggested the line of investigation. Sir Walter Fletcher and Professor F. G. Hopkins in 1908 had investigated the formation of lactic acid in muscles during exercise and its removal during recovery from the effects of exercise. Professor Hill continued the work and approaching it as a mathematician and physicist carried it on by a totally different physical technic. After the war Professor Meyerhof took up the subject on the original lines of Sir Walter Fletcher and Professor Hopkins. The phenomenon with which Professor Hill has been particularly concerned is the recovery process, which occurs after exercise has been taken. Other matters which have engaged his attention include the nature of nervous excitation, the principles by which the nerve transmits its impulse, the carriage of oxygen and carbon dioxide by the blood, and the elastic properties of human arteries. Professor Hill, who is an extremely modest man, attributes the award to him of the Nobel Prize to the fact that he is fundamentally a physicist, and has been singularly fortunate in finding problems a physicist can work at, in physiological subjects.

LARGE GIFT FOR RESEARCH WORK IN DEAFNESS.

The Senate of the University of London has announced recently that important extensions of their research work for the benefit of the deaf is about to take place. This has been rendered possible by their acceptance of a gift of £10,000 to found a chair of otology, and the donor, Mr. Geoffrey E. Duveen, intends to allocate a further £15,000 to the University College Hospital for the provision of the most complete and modern treatment of the deaf. The double gift is made in memory of the donor's father, Mr. Henry J. Duveen, one of the founders of the art firm of Duveen Brothers, of London, Paris and New York. Mr. Geoffrey Duveen, who has himself suffered from ear trouble for years, lost his only brother from the same cause, following an attack of scarlet fever.

SAFETY OF THE WOMAN WORKER.

At a meeting of the British Industrial Safety First Association, held in London a few days ago, Miss H. Martindale, superintendent inspector of factories, read a paper on Safety First and the Woman Worker, in the course of which she said that according to the last report of the chief inspector of factories, 11,095 reportable accidents occurred to women and girls during the year 1922. These numbers, although large, were small compared to the number occurring to men and boys, which was eight times as much, in spite of the fact that the number of men and boys engaged in industry was only twice that of women. The temperature of the workrooms seemed to have a considerable influence on accident risk. The factory act required that a reasonable temperature should be secured and maintained in workrooms, and it had been the aim of inspectors to insure a temperature of about 60° to 65° F. in workrooms in which a sedentary occupation was carried on. Scientific research had shown that accidents were at a minimum at temperatures between 65° and 69° F., increasing rapidly at higher temperatures and slowly at lower temperatures. A warm but well ventilated room would result in a lessened accident record. Defective lighting was another cause of accidents.

EXPLANATION OF THE CAUSE OF GROWTH.

Dr. Frederick Gowland Hopkins, professor of biochemistry in the University of Cambridge, after having been presented with the gold medal of the Royal Society of Medicine at the house of the Society in London, gave a short address. He pointed out that growth was the predominant attribute of life, and though little was known of its inner meaning there was a number of points connected with it of practical importance. He was of the opinion that, as in the case of a contraction of a muscle, it occurred only in response to a stimulus. There was, for instance, the case of the pituitary gland, which, if overactive, resulted in gigantism. Lower organisms again, such as yeast, only grew vigorously and normally as the result of a special stimulus, and the same occurred with bacteria. The behavior of protozoa was peculiar. A single individual would not multiply unless the medium in which it was grown was of very small bulk; if, however, a pair of protozoa were placed in the medium they did not multiply twice faster, but twenty times faster. Multiplication was solely by division, and the explanation of the rapid increase in the speed of division was due to the fact that each individual, while dividing, secreted into the medium a material that stimulated

growth. Consequently, if two individuals were present they stimulated each other. As for the animal body, Professor Hopkins pointed out that though the adult animal, as a whole, had ceased to grow, the cells of its tissues, transferred to a suitable medium, did not cease to grow and here he said we were touching on the great problem of cancer. The effect of vitamines on growth was a stimulus, for experiments showed that the addition of the minutest quality to the food of vitamine deprived rats produced a remarkable and immediate growth. Finally, he pointed out that while the pituitary was a tissue highly specialized for the general control of growth, any living cell of itself could supply stimulants for growth. When cells were living in community, one cell could stimulate the other to some extent.

EVIDENCE IN FAVOR OF MODERATE DRINKING.

Professor Starling, the well known physiologist, has written recently, or rather has edited, a book in defence of the moderate consumption of alcohol. Most of the book is written by Professor Starling, but in addition there are chapters by Sir Frederick Mott dealing with the relationship of alcohol to mental disorders, by Dr. Robert Hutchison on alcohol as a medicine, and by Professor Pearl on alcohol and mortality. Dr. Starling concludes that the moderate use of alcohol is beneficial and proceeds to the further conclusion that national abstinence by common consent would be a great mistake. Sir Archdall Reid read a paper recently at the meeting of the *Ligue Internationale des Adversaires des Prohibitions,* in which he stated that in his opinion, from the scientific point of view, national total abstinence from alcoholic beverages would be disastrous.

A MEDICAL YEAR BOOK.

In a short time *The Medical Year Book,* written by Charles R. Hewitt, late librarian of the Royal Society of Medicine, London, will be published by William Heinemann, Ltd., London. The object of the year book is to provide a handy volume conveniently arranged and classified and intended to serve as a guide to the current activities of the medical profession of Great Britain.

LATIN AMERICA LETTER

(*From our own correspondent.*)

BALBOA HEIGHTS, *December 11, 1923.*

HOW THE CANAL ZONE PHYSICIANS FIND AMUSEMENT.

Perhaps our medical brethren in the United States sometimes wonder how we dwellers in the tropics employ ourselves when we are not at work. There is a popular belief that the heat, humidity and isolation tend to induce a mental and physical attitude which causes rapid deterioration of mind and body, that the *mañana* habit is speedily induced and that for the most part we care for little except the daily siesta and the monthly payday spree. Nothing could be farther from the truth. We have learned from observation that liquor in the tropics is a grave danger, that physical slothfulness is a serious menace, and that a combination of the two is absolutely deadly. Therefore, despite the fact that the average medical employee works every day at least from 8 a. m. to 4 p. m., few of us do noontime hammock fatigue and practically every one of us engages in some form of outdoor sport whenever the weather permits. In a climate of perpetual summer this means practically every day in the year when the rain does not descend torrentially, and as a result most of the physicians wear a splendid coat of tan. There are golf courses at Panama City, Fort Amador, Fort Clayton, Pedro Miguel, Gatun and Fort Davis and every afternoon a procession of perspiring physicians may be seen pursuing that ancient and honorable game which is altogether a vanity and a vexation of the spirit. For the younger men there are a number of good tennis courts and every afternoon buses take swimming parties to the various beaches, where all ages and both sexes disport themselves aquatically. There are also several good swimming pools with excellent instructors, and the Isthmian child who cannot swim is a *rara avis in terræ,* as Horace was wont to say. The fishing is unexcelled and there is hunting a plenty. When one has spent an hour killing a *pappagalla* with a rod and line or has hunted deer all day in the jungle he is apt to feel that he has had some exercise. Several physicians are regular patrons of the gun clubs, and a few ride horseback.

Unfortunately we are rather short on theatrical entertainments, but we have a season of really good opera each year and for those who take the trouble to learn Spanish there are the *variedades* (Iberian vaudeville) and any number of dancers of the Castillian school. The movies we have always with us; always troupes of musicians are passing through to Central and South America and there is a wide variety of social entertainment, official dinners, army and navy hops and receptions. Of the latter, there is almost a superfluity because all the great and the near great pass this way sooner or later and must be properly greeted by the punchbowl-handshaking route. Then there are the *tertuliias* (informal dances) and the *gran bailles* (formal balls) which reach their acme in the wonderfully colorful spectacles of carnival just before lent. Carnival begins on the Saturday noon before Ash Wednesday and ends at midnight Tuesday. There are processions each day; everywhere the natives are dancing the *tamborita,* a dance which was locally extant when Balboa made his famous transcontinental transit, the women in the *pollero,* a national dress seen only at that season, and the men in fancy costume; the streets are filled with confetti throwing, serpentine tossing, perfume squirting children; every night there is a costume ball which lasts until time for breakfast; if anyone doubts that this isn't exercise of the most soul searching sort let him participate whole heartedly in one carnival and try to do his work each day!!

A few physicians take their exercise at the bridge table and others across the line in an earthly paradise which knows not Volstead, but there is no intemperance and little lack of healthful exercise in the medical stratum of our society. When the Medical Association meets at Santo Tomas Hospital in Panamanian territory, a keg of beer revives the tired scientists; once in a while there is a nonsynthetic anteprandial cocktail across the line, sometimes a long, cooling rum punch relieves the fatigue of the

day, but of overdrinking among our doctors, there is none.

Once in a while an exploring party visits the San Blas Islands where the women wear nose rings, or makes the journey to the Darien Indians, who wear nothing at all; sometimes a number of physicians go into the interior to open pre-Columbian graves and collect *guacos,* the gold ornaments and clay pottery which have been hidden there for a thousand or more years; there are prize fights, cock fights and bull fights for those who like them; some find an outlet in the various fraternal orders; yes, there is plenty to interest and amuse those who have the initiative and sense of humanity to look about them. As a result, we are a healthy lot, without too much girth, except in isolated instances, with the appetite which comes from the zest of life, and time moves by on speeding wings. Also, we are a highly contented lot. Some of us growl at this or that, as all normals should, but on the whole, we are comfortably at peace with the world, as are our brethren who live in more rugged climes and struggle with recalcitrant furnaces and frozen automobiles. At least we like to think that such is the case.

THE OCTOBER FLOODS.

As told in a previous letter the rainfall for the month of October was above the normal throughout the Canal Zone and immediate vicinity. In the Pacific section the average rainfall for the month was 14.29 inches, in the Central section it was 27.49 inches, and in the Atlantic section it was 34.41 inches. The totals ranged from 12.69 inches at Taboga to 44.35 inches at Agua Clara, while the greatest amount of rainfall recorded on any one day was 12.25 inches at Gatun on October 23rd, breaking all Isthmian records for twenty-four hours in any one month.

With this tremendous and unprecedented downpour the water supply system of the Canal Zone and the terminal cities of Panama and Colon was seriously threatened and damaged at several points. The first trouble experienced was at the 612,000,000 gallon Agua Clara Reservoir, which supplies Gatun, Gatun Locks, Fort Davis and Fort Sherman. The inflow to the reservoir was so rapid that there was grave danger of the water flowing over the crest of the dam in spite of the fact that both spillways were discharging at their maximum capacity. Men were stationed at the dam with a quantity of sandbags to be filled and piled on the crest of the dam and preparations were made to enlarge the spillways as a last resort. For several days it was feared that the water would pass over the dam and destroy it but fortunately it did not reach the top by several inches.

At practically the same time, October 21st, the eight inch water line which runs from Toro Point, where Fort Sherman is located, to Gatun was broken and investigation showed that entire sections of the line had been washed out and that in other places it was under several feet of water. It was impossible to locate and repair the breaks until the flood subsided. This left Fort Sherman without water and it was necessary to take water for drinking from the piers at Cristobal in barges. Temporary repairs were finally made but a considerable sum and much labor must be expended before the line will be safe again.

An extensive landslide between Summit and Gamboa opened the thirty-six inch line which supplies the entire southern end of the Canal and necessitated shutting down the Gamboa Pumping Plant. To meet the emergency thus created water was secured from the Rio Grande Reservoir situated on the west side of the Canal near Camp Gaillard, but as the pipe line from this reservoir is only a twelve inch one where it passes under the Canal at Paraiso, only two thirds of the amount of water consumed daily could be furnished. Two days later this line was destroyed by a landslide and the only other available source of water supply was the Canal itself and a suction dredge was anchored in Miraflores Lake near the Miraflores Filtration Plant, a twenty inch dredge ppie line was run over the hill and pumping immediately begun to the Filtration Plant. To provide against interruption again, two four thousand gallon per minute pumps were installed in the abandoned Miraflores Pumping Plant and as soon as the installation was completed and the Rio Grande line had been repaired, the dredge was released. Permanent repairs are now being made wherever the water lines were injured and with the advent of the dry season this work will be rushed to completion. In the meantime the water supply of the Isthmus is functioning satisfactorily, the purity of the water has been maintained in safe hygienic limits and every emergency has been met promptly and efficiently.

OLD PANAMA TO BE PRESERVED.

Visitors to the Isthmus have been struck with the lack of care which is given to the preservation of the ruined city of Panama. One of the oldest settlements on the American continent, the scene of the embarkation of Pizarro and his victorious return; an Indian village, originally the home of Tobanama, it was there that Balboa claimed the Pacific for his king and it was there that he was executed by the cruel Pedrarius. Aside from the romantic interest inspired by the thought of the loot of Peru which passed through its port enroute to Porto Bello and the Spanish treasury, the place is of medical note because it is believed that there was established the first hospital on the American hemisphere, Santo Tomas Hospital, of which the hospital of the same name in the modern city of Panama is the direct descendant. After the city was destroyed by Morgan, the pirate who afterwards was rewarded for his wanton act by the governorship of Jamaica, the colony removed to the present site of Panama and what had been a flourishing city of 50,000, including slaves, was allowed to fall into decay. Today all that remains is the bridge over which passed the animals and men bearing Pizarro's loot, and the ruined churches and public buildings. Recently the Alcalde of Panama decided to rid this national monument of the squatters who disfigure it and to clear the ruins of the jungle growth which almost obscures them in places. This is being rapidly done and our visitors in the future will be able to view thoroughly and comfortably this interesting place.

DR. JAMES RETURNS TO THE ISTHMUS.

Dr. William M. James, of the Herrick Clinic of Panama City, has returned after a prolonged visit to the United States and taken up again his medical duties at Panama Hospital.

VIENNA LETTER

(From our own correspondent)

VIENNA, *October 31, 1923.*

PROFESSOR TANDLER ON THE MISERY OF THE VIENNA DOCTORS.

The Association of Vienna Socialist Doctors has started a series of lectures on social medical subjects. The series was opened by Professor Tandler, who spoke on the misery of the Vienna doctors. According to Tandler, the doctors are to be divided into two large groups and those dealing with treating patients are to be distinguished from those being in the service of public health. Out of the two groups, only the first one enjoys the advantages accruing from bid and demand. The law of development demands that the number of doctors in the service of public health be increased continually. All these, however, are much behind their colleagues as regards earning, because they are not allowed to carry on private practice. Notwithstanding this fact, the general opinion held is that the medical career is a very remunerative one. This opinion has to be broken; in the first place by awakening the social feeling already in the medical students. The older medical generation entered on a medical career with the ideal intention of helping their suffering brethren. Today, every student wants to educate himself to become a specialist, in order to earn much money. Therefore the whole medical education has to be altered, and reformed. Professor Tandler draws a sharp line between the special therapeutists and those in public service, and states that he will forbid private practice, for a whole group of physicians in public service, in the near future, and will introduce the system of giving one year holiday in every five years, in order to give them the possibility of supplementing their scientific education. He will propose, also, that in the hospitals the patients shall pay to the administrative board of the hospital and not to the doctors. Also the sickness insurance system is to be reorganized in such a manner that these offices shall not be insuring offices in case of sickness, but rather that they shall prevent the occurrence of diseases. The position of doctors can be improved only in such a way, that the doctors subordinate themselves to the public interests.

THE SLY QUACK.

In a village called Bergstein, Germany, a grocer named Stein has settled, who bought and sold colonial goods, and as a sideline, has dealt also with quackery. Soon the sideline became much more remunerative than his principal occupation. His clientele increased to a wonderful extent. Patients from Belgium, Luxemburg and even from France came to consult him. Before his modest house a whole row of fine carriages and motor cars were waiting, bringing leading persons into his consultation room. The inhabitants of the village held in high esteem the learned "doctor," because the patients from distant places greatly improved the economical status of the poor village. The physicians of the vicinity, however, were dissatisfied, because their consultation rooms were emptier from day to day. They, therefore, reported the case to the magistrate, asking him to forbid the dangerous quack from continuing his practice. The magistrate duly summoned him and accused him of treating patients without having the necessary qualifications. "Not at all! sirs," he said, "I am a duly qualified medical man," and produced his diploma. The judge was very much surprised when he saw that the socalled quack had told the truth. He had obtained his diploma from the University of Berlin. "Then how did you come to pose as a quack?" asked the judge. Dr. Stein smiled and answered: "The matter is very simple. I commenced my medical career as a regular doctor, but though diligent, ambitious, and conscientious, I could not proceed in four years so far that I could earn my rent and food. I put forth every effort to succeed, but everything was in vain, so I hit on the idea of basing my existence on the credulity of people." The "quack" went home to his village, and now he continues his well founded practice as a qualified doctor.

CURE OF PARALYSIS.

The Austrian Psychiatric Institute held a well attended meeting recently, under the presidency of Professor Waggner-Jauregg, where the question of the treatment of progressive paralysis was discussed. Dr. Dattner has related the results he obtained in paralytic cases. He said that in in 1912 Professor Hoches stated that during his twenty years of clinical practice he had not seen a single case which would prove the curability of paralysis. This statement was corroborated by Professor Kraft Ebing, who had 2,500 cases under his care, and not one single case could be cured. It is more surprising, said Dr. Dattner, that Professor Waggner-Jauregg has proved to the medical world just the contrary of these statements. This method has sprung from that observation that the feverish conditions act as a favorable influence on the diseases of the nervous system. Thus, it is an experience of a couple of decades that the manifestations of syphilis disappear with the occurrence of an incidental high fever, not to recur for a good length of time. The survival of a high fever raises the resisting power of the organism, and therewith its fight against the spirochetes is alleviated. These experiences are forming the base of the Waggner-Jauregg method. His observations have convinced him that an incidental malaria in a paralytic increases the natural protecting power, being at the disposal of the body, in a much higher degree, than a simple feverish state. On the ground of this fact he produces malaria artificially in his paralytic patients. The high fever setting in annihilates the spirochetes. The higher the fever, the more certain is it that the protecting materials, mobilized to the defeating of the malaria, are annihilating at the same time the spirochetes too. The treatment of the induced malaria is done in the regular way, adding the abundant use of arsenobenzol preparations which support the body in its fight against the spirochetes. Dr. Dattner said that the method of Waggner-Jauregg had been tested in Vienna and Prague in more than three hundred cases. More than half of the patients were totally cured. The Wassermann reaction became negative, the spirochetes disappeared from the blood and the paralytics were able to resume work.

Book Reviews

ENDOCRINOLOGY

Die Krankheiten der Endokrinen Druesen. Von Dr. HERMANN ZONDEK. Mit 173 Abbildungen. Berlin: Verlag von Julius Springer, 1923.

As indicated in the author's preface, this volume is intended for the guidance of the practitioner and the student in a field full of theories and speculations. Accordingly, Zondek has considered it advisable to deal with recognized diseases or clinical complexes and explain the underlying dyscrinisms rather than to study each of the glands of internal secretion in turn. This is in accordance with the view, now generally accepted, that most of the clinical pictures represent deficiency diseases on a basis of polyglandular pathology. The book contains an interesting but rather sketchy chapter on the history of the study of the endocrine glands, in which, by the way, no mention is made of Cannon, Crile, or Sajous. The reciprocal relations of the various glands, the tests of endocrine reaction, and general organotherapy, among other topics, are considered in the general part. In the special division the author takes up, in turn, Graves's disease, myxedema, endemic cretinism, tetany, presenile involution, adiposity, cachexia hypophyseopriva, acromegaly, gigantism and nanism, diabetes insipidus, osteomalacia, Addison's disease, osteopsathyrosis, status thymicolymphaticus, and finally, the gonadal dyscrinisms. The photographs of illustrative cases are particularly good.

DIABETES

The Treatment of Diabetes Mellitus With Observations Based Upon Three Thousand Cases. By ELLIOTT P. JOSLIN, M. D. Third Edition, Enlarged, Revised and Rewritten. Illustrated. Philadelphia and New York: Lea & Febiger, 1923.

Verordnungsbuch, und Diätetischer Leitfaden für Zuckerkranke. Mit 149 Kochvorschriften. Von Prof. Dr. CARL VON NOORDEN und Prof. DR. S. ISAAC, in Frankfurt am Main. Berlin: Verlag von Julius Springer, 1923.

The subject of diabetes mellitus and its treatment with insulin is still in its infancy and is undergoing changes from day to day. The author has brought forth a book which enables the physician to know almost at a glance how to treat any feature of diabetes with which he may meet. Even though advances in knowledge are expected, this book deserves a hearty welcome to guide the physician through all the intricacies of the disease. It is an excellent summary of our present knowledge at this moment. The innovations, in this the third edition, are the chapter on insulin therapy and the sections on pathology, respiratory metabolism, levulose, duodenal ulcer, diabetes of twenty years' duration, the Newburgh and Marsh methods, and the modern conceptions of acidosis. The insulin treatment in the home is of particular interest to the general practitioner. Bailey's tables of diabetic and nondiabetic foods are of inestimable value. The Harris and Benedict tables for predicting the metabolism are very clear. The technic of the treatment outlined and the test and maintenance diets simplify the therapy considerably. The time honored treatment of diabetic coma without the use of alkalies or excessive carbohydrates is discredited. The subject of surgery in diabetes is treated in great detail. The bibliography, including English, German and French literature, is complete and up to the minute as late as May, 1923. A great many case reports are cited and their progress is noted up to the time of publication—November, 1923. The style is delightful and straight to the point. It proves most interesting reading and one almost feels regret at ending a chapter. To the physician who wants to know all there is to be known about diabetes mellitus and its treatment at the present moment this book is invaluable and indispensable.

* * *

This is the seventh edition of a little pamphlet that was originally prepared by Carl v. Noorden and E. Lampé and intended for distribution among diabetic patients in their private clinic. It has been thoroughly revised and extended. The subject matter deals exclusively with the diet of the diabetic patient. Although certain dietetic courses are advised, the physician himself should individualize the prescribed diet to suit each individual patient. About one hundred and fifty recipes for the preparation of foods are given in detail. The manufacturers of certain diabetic foods are also mentioned. This little book may be used by both physicians and patients, but the diet should always be supervised by the physician to suit the varying conditions requiring treatment. The tables of food substances give the food values and constituents, not as they occur in the raw state of the food, but as they are available and their amount, which is of great assistance in the calculation and prescription of the diet. The work is based on an experience of twenty-eight years in over twenty thousand patients and serves its purpose admirably.

COLLOIDS

The Colloidal State in its Medical and Physiological Aspects. By SIR WILLIAM BAYLISS. Oxford Medical Publications. London: Henry Frowde and Hodder and Stoughton, 1923.

No one is more competent than Sir William Bayliss to present to an English audience those interesting and obscure problems concerning the relationship of matter, when one phase is in the solid, the other in the fluid form. There is a great deal of extremely loose talk among medical men and even biologists concerning the immense importance of the colloidal state, and the explanation of the nature of living substances, but when one reads even so limited a presentation of the subject as this little book of Bayliss's, it is very evident how great are the lacunae in our knowledge and how important further researches are. While not replacing any of the standard works on colloid and interfacial phenomena which have appeared in German in the last few years, this volume is the best short survey of the subject in the English language.

COLLOIDS

Pharmacodynamie des Colloides. Choc, Pathologique et Therapeutique. By W. Kopaczewski. Paris: Gaston Doin, 1923.

Much interest has centered around the discovery in recent times of the fact that colloidal suspensions of indifferent substances such as kaolin produce symptoms resembling those of anaphylaxis. A restudy of the whole subject from the point of view of colloid chemistry is now in order. The writer of this small volume has collected in a convenient form much of the information which has been published on the subject, and for those who read French, it will prove of interest. The physician who is endeavoring to obtain some practical hints as to the treatment of his patients may well avoid the labor of its perusal.

THYROID SURGERY

Le Sympathique, Cervico-thoracique. By Thomas Jonnesco. Paris: Masson & Cie, 1923.

This is one of the most beautiful books that has even been brought out on the anatomical and surgical considerations of the sympathetic in the neck region. It contains thirty-four figures and ten colored plates of exquisite workmanship. The region considered is of special importance in reference to thyroid surgery. Many technical operative procedures are explained in detail. This book should prove extremely popular in this country.

INTERNAL SECRETIONS

Les Sécrétions Internes. By Maurice Perrin and Alfred Harns. Paris: J. B. Bailliere and Fils, 1923.

This second edition should be welcomed as it comes at a moment of intense interest in matters concerning endocrinology. The attack here is primarily that of the influence which the endocrine glands have on the blood. In the light of our present knowledge, the work is well handled, only the most acceptable hypotheses being considered. The various glands are taken in turn and then a general résumé is given of their interrelationship. The book fills a distinct need in the field of endocrinology.

ASTHMA

Asthma. By Frank Coke. New York: William Wood & Co., 1923.

It was indeed a profitable pleasure to read Dr. Coke's recent book in which asthma and hay fever are treated clearly and concisely. Coke presents a new classification of asthma, which seems to be very satisfactory; it is certainly as practical as the other classifications that have been used.

Case reports on pages 165 and 166 are interesting, but, perhaps, somewhat over optimistic. The failures in the treatment of asthma and hay fever are not given the emphasis that their unfortunate frequency warrants. The wisdom of adding the term adzyme to our already overstocked list of immunological terms might be questioned. Will it not have a tendency to increase our present confusion? On page 35 Coke states that it is rarely necessary to make a control test, except in those cases where we are testing the sensitiveness of high dilution. In the opinion of the reviewer it is essential to make a control test in every case. Many patients have hypersensitive skins, so called dermatographic skins, and react positively to all scratch tests. It is unfortunate that so little space has been devoted to pollen sensitization, since it is so prevalent in this country. Coke gives excellent reasons for the occurrence of late sensitizations, particularly to feathers. Several cases are cited of sensitization to human hair. This is most interesting and highly important. It deserves careful study.

Coke's results with bacterial skin tests have been more encouraging than is usual. As a rule there have not been very good results with bacterial proteins in skin tests. While we may not agree with Dr. Coke in every particular, yet he has contributed a timely and valuable addition to medical literature.

THE LARGE GUT

Diseases of the Rectum and Colon and Their Surgical Treatment. By P. Lockhart-Mummery. F.R.C.S. Eng. New York: William Wood & Co., 1923.

Civilization leads to many disturbances of the alimentary tract and more especially of the lower portion of this organ, namely, the colon and rectum. Foods are usually given in pure form, divested of all indigestible material and a sedentary life is more common. These two factors make affections of the bowels more frequent. Lockhart-Mummery's present excellent work is written with the object of helping physicians combat successfully the diseases of the colon and rectum. The question whether the colon is a useful organ the author answers in the affirmative. "There has recently been much dispute," he says, "as to the value of the colon, and there are not wanting those who maintain that we should be better and healthier if we possessed no colon. The fact that human beings can live without a colon is, however, no proof of its uselessness, and at present the evidence brought forward to prove that the colon is a useless and effete portion of the alimentary tract is anything but convincing. Under conditions of modern civilization, it is undoubtedly possible for human beings to live without a colon, and perhaps even for it not to be missed; but man was not designed to live in a London flat, with servants and a banking account, and this can hardly, therefore, be taken as an argument that the colon is useless."

Lockhart-Mummery is not an advocate of colectomy. He says: "Sir Arbuthnot Lane has found, after resection of the entire colon, that the patients suffer severely from vomiting, which in several cases has threatened to end fatally; this can be prevented by subcutaneous infusion of water. It is, I think, evident that the loss of body fluids resulting from total exclusion or excision of the colon may seriously interfere with health, and this loss cannot entirely be compensated by an increased intake of fluid by the mouth. Further loss of health from that cause may not be evident for a long period after operation. It would seem that it is not the loss of fluid alone, but of some other constituent of the intestinal contents absorbed or reabsorbed by the colon which interferes with the patient's health."

The author lays great stress on a digital examination. In ulcerative colitis, Mummery advocates an early appendicostomy, especially in the severer form of the disease. He considers the prognosis of ul-

cerative colitis as bad unless an operation is done. The purpose of the appendicostomy is to establish efficient flushing of the colon through a tube introduced through this new opening into the colon. Mummery does not seem to be aware that this can be done without operation by introducing an intestinal tube through the mouth and permitting it to reach the cecum—a procedure which has been described in the New York Medical Journal.

There is a special chapter devoted to diverticulitis of the colon. The book abounds in fine illustrations and contains rich and useful information on the handling of the diseases of the rectum and colon. It is certainly one of the best books written on this subject and deserves a prominent place in the physician's library.

BACTERIOLOGY

Leitfaden für die klinisch-bakteriologischen Kulturmethoden. By Dr. Hugo Schottmüller. Berlin-Wien: Urban and Schwarzenberg, 1923.

This little volume of under a hundred pages contains an excellent survey of the current technic for bacteriological study of the blood. The methods given are largely those developed by Schottmüller and his German coworkers. Little or no attention is paid to the important contributions which have been made from this country. Within these limitations the work is complete, and offers a useful guide in bacteriology.

NURSING MANUAL

An Introduction to Applied Psychology for Nurses. By Donald A. Laird. Illustrated. Lippincott's Nursing Manuals. Philadelphia and London: J. B. Lippincott Company, 1923.

Nurses will find here a book full of practical interest as it is stimulatingly instructive, for it vitally represents life just as it occurs. It presents to the nurse a field of observation within herself and gives aid through enlarged understanding in dealing with her patients. It presents psychology as nothing more nor less than the study of the organism in its problems of reaction to the environment. The author discusses the nervous system as a functioning mechanism which the organism has evolved for itself to permit the necessary reactions, but only as one part of that larger mechanism which includes also the physicochemical cell and the glandular systems. He shows that the complicated psychic life has grown up upon a basis of interrelation of these various functional capacities. He traces in brief some of the complexities of emotion and thought which utilize these mechanisms and which in turn are dependent upon them. These are the moods, temperaments, distinct mental aberrations, or the more ordinary forms of behavior to be found in the patient or in the nurse herself or others in the environment. Thus psychology is given a fundamental physiological and biological foundation, while the psychic aspect is not neglected. One might complain of too great brevity in regard to the actual mental content, particularly in the unconscious, which motivates various special conditions enumerated. This brevity however, in part is compensated for by the suggestiveness both in the matter and in the method of presentation. There is at least sufficient reference to the range of mental content and mechanism to stimulate further inquiry.

EXERCISE

Exercise for Health and Correction. By Frank D. Dickson, M. D., and Rex L. Diveley, M. D. Philadelphia and London: J. B. Lippincott Company, 1923.

The authors state in their preface that this book was written with but one purpose in mind—the giving to those interested in the building up of their bodies a brief but fairly complete and systematic manual of exercise. To this end the number of exercises included was reduced to a minimum, and many purposely omitted, for instance, those used in the treatment of scoliosis and curvature of the spine, since these can be successfully employed only under the direct supervision of a trained instructor and so would be out of place in a work intended largely as a guide for selfinstruction.

The exercises are arranged in a series of five groups. The first two groups are designed to tone up the muscles of the body as a whole and to improve the general health. The three latter apply to special conditions that are moderately prevalent and that may be remedied by training of the muscles. Groups 3 and 4 include exercises valuable in treating faulty carriage and visceroptosis. Group 5 applies to conditions in which lack of muscle balance in the foot is present, such as flatfoot and fallen arches. A special feature of the book is the excellent illustrations, all made from photographs to show exactly the execution of each movement.

A brief introduction emphasizes the value of the proper attitude of mind, attention concentrated upon the business in hand, a clear understanding of the various movements of each exercise, and exactness of execution. Although the book is written for the layman, physicians and nurses and physical directors should find it of value, particularly in advising or prescribing home work.

PSYCHOLOGICAL FICTION

Round the Corner. By Gilbert Cannan. New York: Thomas Seltzer, 1923.

Annette and Bennett. By Gilbert Cannan. New York: Thomas Seltzer, 1923.

It was our good fortune to happen upon *Round the Corner* after reading its sequel *Annette and Bennett.* Questions of behavior, character, environment, surmised from the latter volume, are here verified. We meet Annette and Bennett in the making, follow breathlessly the very near engulfing of Bennett in a mother fixation vortex. The strain of James Lawrie that proves the salvation of all the sympathetic characters in this series of Mr. Cannan's, is hinted at here, but is not quite the *deus ex machina* that it is in *Annette and Bennett.* Probably there is an earlier volume to tell us how James Lawrie himself was captured, flayed and garrotted, but we have not yet come across it. Mr. Cannan has analyzed and interpreted all these friends of his in a way that leaves room for no improvement. We should like to see what he has to say about the fatal fascination that holds old Lawrie bound to his drink-shod, hag-ridden nights and days. Bennett escapes the ghoulish mother (thanks to the Lawrie in him plus Annette); his son who figures in the later volume escapes also by virtue of the same combination. What then has got into the bones of the ultimate hero?

Round the Corner shows a milder form of domestic infelicity than that of the Lawrie household. Yet it is, perhaps, just as deadly a picture for it combines with its internal bitterness, hypocrisy. At least the hate is in the open at Lawrie's. The Folyats—(is it because Mrs. Folyat is so imbecile, or should the sin really be laid at the door of a generally imbecile society?)—the Folyats are an ideal family—to outsiders. Such lovely people!

Now we are going to read *Annette and Bennett* again to catch up further developments among all these newly met characters, and then perhaps we shall turn once more to *Round the Corner,* to savor the beginnings of lives that are as real to us as our own.

Medicoliterary Notes.

Some interesting vital statistics for Prussia have recently been published by the government of that country. The figures include data covering the years 1912-1921. It may be of interest to quote a few of these. The population of Prussia in 1912 was estimated to be 41,300,000; in 1921, it was 38,300,000. Suicides recorded in 1912 amounted to 8,793; in 1913, to 9,214; in 1921, to 7,559. The number of births in 1913 was 1,173,416; in 1921, they fell to 968,768. Deaths from excessive indulgence in alcohol were 936 for 1912; 913 in 1913; 155 in 1920, and 297 in 1921. Before the war, the number of divorces amounted to from 4,000 to 9,000 each year; in 1919 this number increased to 13,261; in 1920 to 23,059; and in 1921, to 25,836.

* * *

Barnum, by M. R. Werner, is one of the most interesting and entertaining biographies of the year, and valuable besides as a study of the psychology of "the prince of humbugs," which the great showman was pleased to call himself, as well as of the psychology of the crowd, especially the American one.

* * *

Chicago is making a fight against the smoke nuisance. It was one of the first American cities to combat this nuisance, the first smoke ordinance having been passed in 1881. A recent issue of the *Weekly Bulletin* of the Department of Health is devoted to telling how this fight has been carried on since 1881, with suggestions and advice as to how householders, landlords, janitors, etc., can give practical help, and at the same time save fuel, by running their heating plants properly.

* * *

Maurice Maeterlinck, Jane Cowl and Rollo Peters have combined in presenting a very charming and beautiful entertainment for the theater goer in the current production of *Pelléas and Mélisande.*

* * *

A Preface to Life, by Edwin Justus Mayer, recently brought out by Boni & Liveright, is the autobiography of a New York City youth who has been already in his short span of life a salesman, a peddler and a press agent, yet has had—or made—time for much fun, plenty of reading, outdoors, wholesome self study, and many of the other pleasures and benefits of life popularly supposed to be nonexistent for the individual who holds a real job in the daily grind of the Great City. Perhaps early experience in the business world, coupled with an intelligent and wholesome interpretation of that experience led to wisdom. We gather this from what Mr. Mayer writes: "At fifteen I began a journey encumbered with a lot of useless and false data concerning the history and aims of Man. . . . So utterly nonsensical were the notions I held—in common with most boys—regarding the validity of current formulas of success, that my first adventures among jobs were sufficient to knock those long accumulated notions clear out of my head."

* * *

Among books on medical subjects recently published are *Walking for Health,* by Dr. Alvah H. Doty (Appleton), and *Vitamines; A Critical Survey of the Theory of Accessory Food Factors,* by Ragner Berg, a German authority (Knopf). A new publication from the University of Chicago Press is *Protoplasmic Action and Nervous Action,* by Ralph S. Lillie.

* * *

Dr. Haven Emerson, writing in the *Nation's Health,* states that in a study of the records of heart patients of ten hospitals in New York City for twelve months in 1920, and in some cases in 1921, it is shown that in not less than 4.58 per cent. of all admissions to general hospitals the patients were suffering from heart disease of a seriously disabling degree; 9.35 per cent. of all days of bed care provided were required for these cases.

* * *

Adventures in Silence is the title of an interesting autobiographical work by Herbert W. Collingwood, a man who through forty years gradually became deaf. He relates his experiences on "the road to silence" and tells of his life after hearing was completely gone. The purpose of the book, the author states, is to furnish a sincere personal record of the life and psychology of the deaf, with a view to helping others so afflicted to attain the sane and, to an extent, successful sublimation reached by himself.

* * *

A method of preventing propagation of mosquitos that has been tried out both in Panama and in Germany is the growing of water plants capable of excluding air from the larvæ. Several plants have this capability, but one that can do it most attractively as well as efficaciously is the *Azolla Caroliniana,* a water fern with leaves so small that their structure, to be perceived, must be studied through a microscope. When thus examined, minute air bubbles are perceptible, supporting the plant on the water so that the upper surface is kept quite dry. Mats of *azolla* float on the water, resembling beautiful rugs woven from red and green strands. It is these mats that by excluding the air, are death dealing to the mosquito larvæ. The *azolla* multiplies with great rapidity because it reproduces not only by spores but also by direct budding from the parent cells.

Practical Therapeutics

ENDOCRINE THERAPY

By J. T. Wright, M. D.,
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From articles by Lewellys Barker, Cohoe, Litchfield, Hoskins, Bandler, Hoxie, Banting and others, I present a few of the findings and indications for the therapeutic use of endocrines, so far as known, to present date.

Endocrinology has assumed almost a special field of medicine, and much study, thought and experimentation have been expended by clinicians and laboratory men in an endeavor to learn Nature's secrets in this mysterious realm, and apply the same to the relief or cure of disease, and recently the brilliant results achieved by Banting with his product of the pancreas (insulin) in the treatment of diabetes has stimulated further study and research, which we trust may be richly rewarded. However, no fixed principles have as yet been established concerning the physiology of the endocrine glands, and present day endocrine treatment has developed empirically by trial and experimentation; for as yet only three hormones have been successfully isolated—epinephrin, thyroxin and insulin; the latter recently.

The obvious aim of any form of endocrine therapy should be to restore the patient with demonstrable endocrine dysfunction, or imbalance, to a state of normal functioning of the incretory glands, and theoretically this might be accomplished in three ways, viz., increasing, modifying, or decreasing the functional activity of these glands. In cases of hyperfunctioning surgical intervention may be resorted to and excision of the gland may be undertaken, as in goitre, or the arteries ligated. Also radiotherapy may be used with benefit.

Where there is hypofunction transplantation of a homologous gland may be attempted, or therapy by administering the gland extract or hormone, either by mouth or hypodermically. One of the obstacles to organotherapy is the variability in the preparations of gland products and of the doses employed. They should be standardized. Also there is variability in the reaction of patients to any given hormone. Hoskins has pointed out that in the case of epinephrin the vasomotor reactions may be diametrically opposite, depending on the initial blood pressure, vitality, temperature, dose and on depth of anesthesia when used as a heart stimulant.

Pituitrin may act variably also, depending on the condition of tone of the responsive mechanism at the time. Neither do we have any definite knowledge of the fate of the gland extracts or hormones in the alimentary tract when administered by the mouth, or how much they may be absorbed. Nevertheless, I have seen marked improvement in cases of neurasthenia, and in a few cases of dementia precox (catatonic), which resulted from organotherapy, combined with protein rich diet, hydrotherapy, diversion and hygienic living.

Carlson has pointed out, however, that endocrine therapy can hardly have effect on conditions due to dysfunction of the ductless glands that function on the principle of detoxication; or on glands which furnish incretions, where the hormones are not stored up in the gland, or cannot be chemically isolated; or where they are destroyed by digestion after oral administration. However, this is no reason for not trying, or for pessimism, as means and methods may be learned and used successfully as our knowledge increases and research progresses.

The brilliant results obtained by Horsely, Murray *et al* in the treatment of myxedema; and of pituitrin in obstetrics and in postoperative tympany and flatulence, justify all the labor spent in an effort to evolve or create a definite endocrine therapy for other conditions—not to mention the recent epoch making discovery of Banting and associates of insulin and its marvelous effect in controlling the sugar output in diabetes mellitus. Lately also much has been written of the action of epinephrin (adrenaline) injected into the heart muscle as a means of resuscitating the apparently lifeless, after drowning, prolonged anesthesia, severe syncope, etc. So it would seem this field offers a brilliant future to earnest, scientific investigators.

To mention a few of the clinical applications of organotherapy it is only necessary to add a few items. It has been shown that thyroxin, which was isolated by Kendall in 1914, is a general body cell stimulant, that it is present in a definite amount in the tissues of the normal body, and that a full dose administered to a thyroidless person is not fully exhausted until the sixth to eighth week, and that a small daily dose will hold the basal metabolism of the patient within normal limits. Thyroid extract has been used in myxedema, cretinism, obesity, chlorosis, enuresis, certain cases of epilepsy, eczema, psoriasis and sterility; the basal metabolism rate being a criterion for its dose. Lately it has been shown that at least three other glands, the suprarenal, the anterior lobe of the pituitary and the gonads, influence metabolism.

Tethelin, isolated by Roberts in 1916, is supposed to be the active principle of the anterior lobe of the pituitary, but it has not yielded thus far any remarkable results and is probably not a true hormone, but extracts of the anterior lobe have been tried with variable results. The active principle of the posterior lobe pituitrin, however, is known to be one of the most powerful stimulants and contractors of unstriped muscular fibres, given hypodermically. It has been used in obstetrical practice, shock, certain types of epileptiform convulsions, where the gland is diseased, with good results; in impotence, dementia precox with probable endocrine basis; baldness and other conditions. In Addison's disease treatment by suprarenal extract has been insufficient and disappointing. In low blood pressure and neurasthenia it has given results, and recently it has been found that there is a relative functional insufficiency of the suprarenal cortex in exophthalmic goitre, and fresh ox suprarenal cortex fed to patients raw who had exophthalmos caused a rapid increase of weight and much strength, though the pulse rate was not changed. Epinephrin has the same effect in stimula-

tion of the sympathetic nerves and is useful in asthma, shock, cardiac syncope, edema of the larynx, urticaria, anaphylaxis, hay fever, and other conditions. Regarding the gonads, corpus luteum has been used in vomiting of pregnancy, menstrual disorders, climacteric disturbances and hypertensive states. Ovary and testicle extracts have been used in osteomalacia, as invigorators; and gland transplantation in impotency and senility with temporary results. The pineal gland seems to be in some way essential to the growth and development of the child, but no results have followed its administration. The thymus gland is as yet little understood, but is essential to child life. The prostate gland and its secretions are being studied, as well as the lymphatic ganglia, the spleen, the internal secretions of the liver, and we hope soon to have further knowledge of these interesting organs and their connection with the mysteries of life, heredity, mentality, etc. As some one has said, "We are the product of our glands."

SOME CONSIDERATIONS OF BLOOD PRESSURE DISORDERS, THYROID HYPERTENSION, AND ADRENAL HYPOTENSION

By Henry R. Harrower, M. D.,
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The present day interest in the study of the endocrine glands has opened up some very fascinating possibilities in the control of functional irregularities in the blood pressure. Since the advent of the sphygmomanometer, it has become quite the thing to estimate the blood pressure in practically all classes of puzzling cases, with results which can only be considered an advantage to all concerned.

Of the two great classes of irregularities in the arterial tension—the functional and the organic—the former particularly will be given some consideration at this time. This form of high tension is sometimes called essential hypertension, while others term it primary or benign hypertension. Organic blood pressure changes rarely have an endocrine aspect of importance and we shall not consider them now.

Essential high blood pressure is common enough in certain types of patients, but my personal opinion is that this disorder is far less frequent, and also less easily controlled, than a reduced blood pressure. Let us consider the problem of functional hypertension from an endocrine viewpoint and see if it does not open up to us some interesting therapeutic prospects.

In Sir Humphrey Rolleston's recent paper (1), he remarks that "it must be admitted that of the cause or causes of simple permanent high blood pressure we really have no exact knowledge." Yet I think that we are learning something which will dispel this ignorance. The thyroid gland is known to exert an important and decisive control over cellular chemistry. Studies of thyroid insufficiency ranging from the minor and insignificant forms to the major type, such as myxedema, convince us that one feature is preeminently important, because it is invariably present—I refer to the condition called by Dr. Eugène Hertoghe, of Antwerp, infiltration. The philosophy of this is briefly explained as follows:

The thyroid gland exerts a stimulating effect upon the cellular metabolism. Conditions which reduce the thyroid efficacy also lessen the metabolic rate in the cell, with a consequent accumulation of wastes, which must clog up the entire mechanism. The accumulation of these half oxidized, poisonous waste products in the cells naturally causes a physical reaction which is based upon the fundamentals of osmosis. The intracellular tension is increased, merely because there is a larger amount of these substances in solution. As a result of this, an increased amount of fluid is drawn to the cells from the surrounding lymph in order to make the specific gravity of the cellular contents equal to that of the surrounding fluids. This actually swells out the cell and as a result, the condition of infiltration is started. Without a doubt, this is just what takes place in varying degrees in all the cells which are influenced by the thyroid hormone and, as far as we know, practically all parts of the organism are influenced thereby.

There are many clinical aspects to this matter of thyroid infiltration. Hertoghe and many other writers have emphasized its various phases in a number of papers. I now propose to call your attention to an aspect of this subject, which relates the thyroid to high blood pressure. Without a doubt, the infiltration of millions of cells in the remote and so-called precapillary areas brings about, in the aggregate, a serious interference with the circulation, which cannot but cause an increase in the tension. The heart discovers that it has a greater opposition than heretofore to its efforts to force the blood through the capillary circulation in the extremities of the body. As a result of this the left half of the heart, in particular, works harder and more strenuously, thus increasing the tension. Thyroid insufficiency favors a mechanical interference to the circulation in the precapillary areas and a functional high blood pressure is thus brought about. Quite the best evidence of this is the fact that the stimulation of the cellular chemistry by the only rational means under the circumstances, that is, thyroid therapy, gradually reduces this infiltration and with it, not merely many symptoms of hypothyroid origin known to be based thereon, but also frequently reduces the blood pressure. For many years there have appeared in clinical literature occasional hints that thyroid in suitable cases was a depressor remedy, small doses sometimes reducing, in a comparatively short time, an increased blood pressure by thirty or more millimetres.

There are some other aspects of functional high blood pressure that relate to others of the endocrine glands. The adrenals must be involved in certain cases, for the well known toxic and emotional features of certain hypertensions are far too common to be more than a suspicious coincidence.

Again, a number of gynecologists have found that, in women at the climacteric there occurs a temporary hormonic rearrangement, which sometimes is associated with considerable increases in the blood pressure, which are mitigated by a modification of the hormone irregularities of this period. As to whether climacteric hypertension is purely of ovarian origin, and whether there is not also a thyroid feature to it,

I can only say that hyperthyroidism is very much more common in women; and that those who have studied the statistics carefully, say that ninety-five per cent. of the cases of myxedema in women occur in the decade between forty and fifty.

Now, a few words regarding hypotension. It is an exceedingly common feature of many diseases. Sir Humphrey Rolleston says in this connection: "In most acute infections the blood pressure is lowered. Diphtheria shows a well marked fall of blood pressure; in scarlet fever the lowering of the pressure is much less than in diphtheria and enteric fever[1] . . . Tuberculosis is generally regarded as characterized by a low blood pressure, and so on."

The marked asthenia of the postfebrile state or of the toxic individual, effects the tonicity both of the cardiac musculature, and of all unstriped muscle, including that of the bloodvessels. Hence a low systolic tension is to be expected in a large number of conditions, acute or chronic. The cardiovascular aspects of these fatigue syndromes very often include hypotension. In fact, the late Dr. Alfred Martinet, of Paris, referred some years ago to a circulatory syndrome related to minor adrenal insufficiency, which he aptly termed hyposphyxia which consists essentially of poor circulatory tone, cold extremities, venous stasis, and, naturally, a low blood pressure. Persons with the fatigue syndrome and hyposphyxia have so uniformly been affected by some adrenal depleting condition—toxemia, undue fatigue, or emotional stress—that the search for other features of hypoadrenia usually is rewarded by uncovering further evidence relating the circulatory picture to the endocrine.

Functional hypoadrenia is a most common cause of functional (systolic) hypotension, and both the cause and the extent of its effects differ from the real Addisonian disease only in degree. In other words, hypoadrenia is a minor or functional inadequacy; and it is well known how marked and pathognomonic is the circulatory disorganization in actual adrenal disease.

Quite the most interesting and convincing feature of functional hypotension is the facility with which it responds to a therapeutic measure which I have called adrenal support—an organotherapy calculated to encourage and reestablish adrenal activity. To my mind such responses are as confirmatory of the original basis of the pressor difficulty as are the benefits derived from thyroid therapy in hypothyroidism. In fact, the endocrine features of functional hypotension, as well as those of functional hypertension previously referred to, have the very great advantage of serving us in a diagnostic way, just as their application benefits our patients from a therapeutic standpoint.

The physician who has made blood pressure studies in several hundred cases undoubtedly has learned that one interesting feature of a functional blood pressure irregularity is the fact that the diastolic readings are not so seriously altered; or, in other words, that functional blood pressure changes usually involve the systolic pressure only. The pulse pressure, i. e., the difference between the intravascular tension during the period of heart rest (diastole) and the ventricular activity (systole) naturally is increased comparatively more in such functional disorders, since organic conditions which cause an increased diastolic pressure may not cause so great a systolic rise with a corresponding variation in the difference between these figures. At any rate, I have found that functional, noncardiac, nonsclerotic, and nonrenal increases in the blood pressure usually become systolic in time.

If the two dissimilar blood pressure conditions may be due to hypothyroidism on the one hand, and hypoadrenia on the other—and general endocrine derangement usually is pluriglandular in character—why may not the hypertension due to hypothyroidism be neutralized by a coincident hypotension due to hypoadrenia? Undoubtedly, the answer is that it may be; and right here is one of the advantages of the relation of the endocrine glands, since the blood pressure conditions due to hypothyroidism and those due to hypoadrenia, in a degree, offset one another. This is also one of the complicating factors from a diagnostic point of view.

When a suddenly acquired hypotension manifests itself, systolic in time, and with an etiology such as I have mentioned, obviously the adrenal feature predominates; while if there is a gradual increase in the systolic tension with coincident evidences of the infiltration expected from hypothyroidism, the thyroid disorder is presumed to predominate.

Pluriglandular treatment directed at a thyroadrenal inefficiency may not affect the blood pressure so much—at least the thyroid which we may give will not reduce the pressure unless the mechanical infiltration factor is present—and it may be said also that thyroid may be given in cases of hypotension with much more impunity than can adrenal substance in cases with really high systolic pressure.

[1] Possibly due to a mechanical factor in the kidney—renal involvement is very common in scarlatina—which tends to maintain the tension.

REFERENCES.

1. Rolleston, Sir Humphrey: *Lancet*, March 10, 1923, p. 519.

THE INTRAVASCULAR USE OF GENTIAN VIOLET

By H. Mooser, M. D.,
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It is the purpose of this article to report briefly on the use of gentian violet intravenously in several cases of systemic infection, proved or suspected of being caused by Gram positive organisms. These cases are taken from the private practices of several physicians. Most of them were treated in the American Hospital of Mexico City.

During the spring and summer of 1921, Dr. Mooser, pathologist to the hospital, repeated some of the experiments of Bresgen, Stilling and Wortmann, reported by Bauman (1), and of Churchman (2), demonstrating the bactericidal action of this dye. Also he injected guineapigs and rabbits with solutions of gentian violet and observed them for toxic symptoms. No such symptoms were noted. A white rabbit of two kilos weight, injected through a vein of the ear with two c.c. of a one per cent.

solution, giving a strength of one to one hundred thousand of body tissue, became cyanotic for about twenty minutes; it sneezed and became cold, but would continue to eat. Ten minutes after injection, the serum showed a slight bluish tinge, and one hour afterward the animal was entirely normal.

While these experiments were in progress, Dr. Mooser suggested the injection intravenously of gentian violet in a desperate case of sepsis then in the hospital. (Case I.)

The gentian violet used was prepared for injection by dissolving in sterile distilled water, filtering, and boiling in a water bath for ten minutes, a fresh solution being prepared for each injection. For some of the injections, solution was first made in one or two grams of alcohol and the water added. Ten or fifteen c.c. of a one per cent. solution is the amount commonly used (in cases reported below solutions were of this strength unless otherwise designated), although twenty c.c. of approximately a two per cent. solution has been given. The solution is injected from an all glass syringe as is neosalvarsan and at about the same rate. A too rapid injection may be followed by some thickening of the vein, and any of the solution outside of the vein sets up a considerable irritation in the adjacent tissues. As the drop of blood cannot be seen if drawn back into the gentian violet solution, I have found it convenient to use the ordinary hypodermic syringe, empty, with a small calibre needle attached for insertion into the vein. This syringe may be filled with blood for culture if desired, disconnected from the needle, and the larger syringe of gentian violet attached. A two per cent. solution of oxalic acid readily removes any stain and cleanses the syringes.

During and for several minutes following the injection there is slight cyanosis. Chills have occurred after about half an hour, and some fever. The majority of the injections have not been followed by reactions. The urine shows no discoloration or evidence of kidney irritation.

CASE HISTORIES.

Case I.—(Dr. Ulfelder). Mr. R., American merchant, aged forty-five, admitted March 21, 1921. The complete record of this case is not of interest in connection with this article. He gave a history of gallbladder trouble of long standing. He had refused operation, but on March 29th, the gallbladder and an abscess surrounding it were opened and drained. He did not do well, but continued a typically septic course complicated by a bad heart. April 9th, temperature 102°, pulse 120—twenty c.c. of gentian violet were given without any noticeable effect. Blood culture gave both colon bacilli and streptococci. April 11th, temperature 101°, pulse 130—twenty c.c. of gentian violet. The man continued to grow worse and died on April 16th.

Case II.—(Dr. Prestley). Mrs. F., Mexican, aged twenty-seven, admitted April 10, 1921. (The chart and record of this case have been lost. These notes are made from memory.) Ten days before admission she had a normal delivery at home, attended by another physician. Two days later she had a chill and fever. She became very ill, delirious, and unconscious, temperature 105°, pulse 120 or more. On admission she had an eruption resembling initial rash of smallpox, leucocytes 28,000 (no increase in mononuclears, the eruption assumed characteristics of serum rash). Fifteen c.c. of gentian violet were given on day of admission. April 11th no fever; pulse still rapid, moderate thrombosis of femoral vein. April 12th, ten c.c. of gentian violet. Continued improvement until discharge May 8th.

Case III.—(Dr. Bokendahl). Mrs. A., Polish, aged forty-four years, admitted June 18, 1921. Two days before admission she had an incomplete abortion, induced by herself. On admission her temperature was 103°, pulse 108, and she complained of chilliness and pains in abdomen. A dead fetus was removed. On the four following days she had repeated chills, temperature 100° to 103.2°, pulse 90 to 140. June 22nd, ten c.c. of gentian violet were given. June 23rd, temperature 98°, pulse 86—ten c.c. of gentian violet. After June 26th the temperature did not go above normal nor the pulse above 90. Discharged July 6th.

Case IV.—(Dr. Prestley). Mrs. P., Greek, aged twenty-four, admitted February 1, 1922. On January 28th, she had had a normal delivery, attended by another physician in her home. The placenta was removed by hand. On January 30th, she had a chill and temperature of 103°. Blood culture gave Streptococcus hemolyticus. She was brought to the hospital restless and delirious, temperature 104°, pulse 152—ten c.c. of gentian violet given. February 2nd, temperature 103.2°, pulse 126—ten c.c. of gentian violet given. February 3rd, the temperature did not pass 100° or the pulse 108. She became maniacal. No further injections were given. She continued with slight irregular fever, rather rapid pulse, and symptoms of a depressive insanity until her discharge February 16th. On April 25th, the husband reported that she was quite well except for alternating periods of excitement and depression.

Case V.—(Dr. Bokendahl). Mr. S., a German machinist, aged thirty-eight, admitted January 15, 1922. Three days before admission he had lost the greater part of two fingers of his left hand in the cogs of a machine. He entered with wounds much inflamed, the fingers were amputated. On January 19th, temperature 103°, pulse 100, with lymphangitis, and arm much swollen. Smears and cultures of pus gave streptococcus. The arm was immersed in hot solutions, the wounds opened well and Bier's treatment used. During the five succeeding days the condition did not improve. Temperature 98° to 101°. On January 26th he had a severe chill, temperature 103°. January 27th and again on January 28th, he was given ten c.c. of gentian violet, followed in each case in half an hour by chills and temperature 103°. January 29th, ten c.c. of gentian violet, no chill. After this date there was steady improvement until discharge February 14.

Case VI.—(Dr. Ulfelder). Mr. R., Mexican, aged 40, admitted January 24, 1922. On the day before he had been run over by an automobile. On admission temperature 98°, pulse 84, left arm badly bruised and lacerated with extensive avulsion of skin. He was given antitetanus serum and wounds cleaned. He did fairly well until January 30th when temperature reached 103°. The wounds were badly infected, the smears showing streptococci. The fever continued and during the succeeding days he was

given several injections of antistreptococcus serum. February 6th, temperature 102.4°. Blood culture gave hemolytic streptococcus—fifteen c.c. of gentian violet. Chill. February 7th, temperature 102.8°, but thereafter he had little fever and steadily improved until his discharge March 28th.

Case VII.—(Dr. Bokendahl). Mr. S., German, clerk, aged thirty-four, admitted February 19, 1922. Three weeks before admission he had an otitis media followed by severe nephritis. On admission temperature 102°, pulse 88, drowsy, marked general edema. The urine contained albumin, ten gm. per mil, blood casts, and streptococci. For several days the condition was little changed, temperature 100° to 102°, pulse 100 to 120, irregular. February 23rd—ten c.c. of gentian violet, repeated on February 24th. On February 25th there was more urine passed, albumin much reduced, less edema. From February 24th to March 1st, condition was fairly good, no temperature above 99.4°. March 1st, temperature 100.4°. March 2—ten c.c. of gentian violet. There was no fever for four days. March 8th, temperature 101°, pulse 120, poor quality, pain in left chest, dyspnea and cyanosis. March 9th, exploration of chest followed by rib resection and drainage. Many streptococci in smears, scant growth from culture. He did fairly well for several days but with gradually rising temperature. March 22, temperature 104.4°, pulse 144. An abscess was discovered between pleura and ribs. This was opened and drained—ten c.c. of gentian violet. Following this there was slow improvement, some fever, and a moderate nephritis. On April 15th he left the hospital, temperature 101°. He continued to improve and on May 10th was walking about.

Case VIII.—Mrs. M., Syrian, aged thirty-nine, admitted February 21, 1922. Three weeks before admission she had given birth to her fourteenth child. The labor was normal. She was attended by a midwife. Four days after labor she began having fever, chills, headache and general pains. These continued until admission. She had been given intrauterine douches. On admission temperature was 98°, pulse 84. Examination negative except for moderate uterine subinvolution. February 22nd, the temperature and pulse remained normal. February 23rd, temperature 103° and continued high through February 24th. She had a chill. February 25th, temperature 99°—ten c.c. gentian violet. February 26th, temperature 98°—ten c.c. of gentian violet. February 27th, chill, temperature 101.2°—fifteen c.c. of gentian violet. The next day she felt much better, temperature 98°, continuing normal until her discharge on March 8th.

SUMMARY.

The cases reported are from the experiences of several physicians, working independently of each other, therefore the histories and observations recorded have been difficult to compile and they are not as complete as could be wished. The experience of no single one of us has been extensive enough to admit of dogmatic opinion, but it seems that we are justified in concluding:

First, that the intravascular use of gentian violet is not seriously toxic, that it is practicable probably in larger doses than those we have used.

Second, that the behavior of some of these cases warrants the belief that we may have in it a therapeutic measure of great value.

Third, that these experiences seem to support the natural assumption that the blood infections without well developed and destructive foci in the tissues will be the most benefitted.

Treatment of Diabetes Mellitus with Insulin and Carbohydrate Restriction.—George Graham (*Lancet,* June 9, 1923) states that in order to get the best results it is unwise to give any carbohydrate at all, except that contained in vegetables, until the fasting value of the blood sugar has been below 0.12 per cent. for some considerable time. In order to produce this result, the blood sugar must fall well below 0.10, or even 0.08 per cent. each day in order to relieve the B cells of the islands of Langerhans of as much work as possible. It may be necessary to aid this by somewhat rigorous dietetic restrictions, or it might be achieved by giving larger doses of insulin. The advantage of this method is that only one dose of insulin a day is required, and the dose is much smaller. The disadvantages are: 1, the comparatively slow progress of the patient; 2, the careful watching of the blood sugar which is required, at any rate at the beginning of the treatment; 3, the necessity of lowering the blood sugar each day below 0.10 or 0.08 per cent., and so running some slight risk of causing unpleasant symptoms if the blood sugar falls too low; 4, the tendency of all patients with severe and long standing diabetes under severe dietetic restrictions to steal carbohydrates and so delay the fall of the blood sugar to normal.

Diathermy for Malignant Disease of the Mouth, Pharynx, and Nose.—On the basis of the results observed in seventeen cases, Norman Patterson (*British Medical Journal,* July 14, 1923) asserts that in cancerous growths in the larynx and mouth the ultimate results are likely to be infinitely better when the primary growth is dealt with by diathermy, rather than by a cutting operation. Complete block dissection of the glands in the anterior and posterior triangles should be carried out even when these glands are not palpable. It is generally advisable to destroy the growth in the first instance and to remove the glands subsequently. Occasionally the two operations can be carried out at the same sitting. If there is any doubt as to the ability of a thorough clearance of the neck, then the gland operation should precede that on the primary growth. If the glands cannot be dealt with it is little use applying diathermy to the primary tumor, except as a palliative measure. It is sometimes advisable to operate on the glands in the first instance, and to deal subsequently with the primary tumor, as consent for the neck operation may be difficult to obtain after the growth itself has been destroyed. Before commencing treatment, it is well to try and obtain consent for two or three operations, and to impress upon the patient the importance of the removal of the glands. If the diathermized area approaches or invades the fascial planes of the neck, a clear interval of a fortnight or three weeks should be allowed between the destruction of the primary growth and the neck operation.

Proceedings of Societies

SOUTHERN SURGICAL ASSOCIATION

Thirty-Fifth Annual Meeting, Held at Memphis, Tennessee, December 12 to 14, 1922.

The President, Dr. C. Jeff Miller, of New Orleans, in the Chair.

Very Large Renal Stone; Nephrectomy.—Dr. J. Garland Sherrill, of Louisville, Ky., reported a case which emphasized the contention so often made for the early removal of stones in the renal pelvis, kidney or ureter, because of the damage done to those structures by their long continued presence. There was possibly no pathological condition in which the diagnosis could be made with more accuracy, or in which relief could be provided with more certainty, than was possible in urinary calculi. There was, however, more difficulty in providing a treatment which would prevent their recurrence and very careful attention to diet, the ingestion of large quantities of water, and properly directed exercise, should be advised by the attendant.

Surgical Conditions of the Right Side of the Abdomen.—Dr. W. F. Westmoreland, of Atlanta, Ga., stated that the majority of these patients were not immediately cured by operation, the mechanical faults were corrected, but the rapidity of the convalescence depended upon intelligent medical care. All of these patients had acidosis, usually of a high grade. This acidosis was generally characterized by an acute fall and spring exacerbation and when an acid intoxication was present they felt very badly. Soda in sufficient doses to control the acidosis should be taken. The diet should not be restricted, but well balanced, with plenty of green stuff, fruit, particularly ripe oranges or orange juice. The patient should have plenty of sunlight and fresh air, preferably taken by light exercise in the open. The rapidity of the improvement in these cases was in proportion to the inhibition of acidosis, the well balanced diet, and the ability of the patient to take light exercise out of doors in the sunlight and fresh air.

Fractures of the Elbow Joint and of the Lower End of the Humerus.—Dr. Edgar Lorrington Gilcreest, of San Francisco, Cal., stated that for the treatment of fractures in the vicinity of the elbow joint, with the exception of fracture of the olecranon process, the fully flexed position offered the best results. Often a splint was unnecessary, the forearm being strapped to the upper arm and fixed to the chest with a bandage. The advantages of the flexed elbow positions were: 1, it gave the most complete anatomical reposition of fragments and the best fixation; 2, it favored the retention of the more important flexion function of the joint; 3, it cooperated with gravity in the subsequent restoration of function. In correcting the initial deformity the following procedures should be carried out: 1, strong traction was exerted on the forearm with the elbow fully extended and supinated; 2, at the same time, the joint was manipulated, the displacement being corrected as far as possible; usually the upper fragment would be found to be displaced forward and the lower backward; 3, then maintaining procedures 1 and 2, the elbow was slowly, but firmly, flexed to an acute angle and so fixed with the forearm supinated.

Strangulated Diaphragmatic Hernia.—Dr. Jere L. Crook, of Jackson, Tenn., said that there was a wide divergence of opinion as to the relative merits of approach. He believed the condition of the patient at the time he was first seen should determine largely our decision in this important matter. Where symptoms of strangulation and ileus were apparent the abdominal approach was an absolute necessity. Where the case was a chronic one, and the diagnosis had been clearly established and confirmed by x ray before operation, he believed the combined approach was indicated. From the experience gained in the case he reported he felt that every operation for the double operation should be made in advance, provided the diagnosis had been made in advance. The abdominal incision should be made first, and if reduction could be successfully performed, and access could be had to the rent in the diaphragm, it might not be necessary to open the chest.

General Plastic Surgery.—Dr. John Staige Davis, of Baltimore, stated that adequate practical training in the principles and practice of general surgery was necessary as a preparation for any real surgical specialty. This was particularly important for one who desired to specialize in plastic surgery, and consequently made its final teaching a postgraduate subject. The postgraduate student should have the opportunity of working in the outpatient department, the privilege of the operative clinic, with the expectation of assisting the operator and receiving personal instruction in operative technic, and eventually be allowed to operate under the eye of the chief. He should have the privilege of following the cases in the wards and of studying postoperative treatment, and the chance for clinical and experimental research on plastic problems. He should have the facilities to study the pathological material removed at operation. Men of special ability should be taken into the house on the plastic service and be given every opportunity to develop. The course should be at least one year, preferably two.

Mesenteric Thrombosis.—Dr. James F. Mitchell, of Washington, D. C., said that mesenteric thrombosis was of particular interest because of its gravity, the difficulty of diagnosis, and the poor results of surgical treatment. Pathologically the occlusion may be either venous or arterial, or both vessels might be involved. The patient under observation had no history of infection or trauma or any other condition which might explain the liberation of an embolus. The majority of cases which came into the hands of the surgeon were of this type, and this fact possibly offered a partial excuse for the extreme infrequency of a preoperative diag-

nosis. The superior mesenteric artery was occluded more frequently than the inferior, the usual explanation being that its diameter was nearly three times as great as that of the inferior; that it arose from the aorta at a higher point than the inferior; thus having an earlier opportunity of intercepting an embolus; and that its course was nearly parallel to that of the aorta, while the inferior ran off at an acute angle. The result of the occlusion was usually a hemorrhagic infarct, a pathological condition which had never been satisfactorily explained, except that while the superior mesenteric artery was not anatomically a terminal or end artery, it nevertheless was so physiologically. Operation at the earliest possible moment with immediate resection of the affected area, with a safe margin of healthy bowel, offered the best chance of recovery. The results were disappointing from a statistical point of view. The mortality in operated cases was variously estimated at from seventy-five to ninety per cent.

Accidental Ureteral Injuries During Pelvic Operations.—Dr. John M. Maury, of Memphis, Tenn., said that removal of the ligatures was the procedure of choice, and when done early there was good reason to expect a satisfactory result. It was more easily accomplished when undertaken before the organization of wound exudates had obscured the field. If for any reason there was delay, the least that one might expect was more or less complete stricture formation with incidental damage to the kidney and simple deligation would not suffice. In order of choice, ureterovesical implantation, ureteroureteral anastomosis or nephrostomy might be employed. In the event of the patient's condition precluding the possibility of choice, the least time consuming procedure must be followed and this was nephrostomy. Double nephrostomy might be done in a few minutes with the expectation that absorption of the ligature and canalization would result in due course of time, while the condition of the patient might make an anastomosis a formidable procedure. If canalization was not satisfactorily accomplished, the patient was in good condition for anastomosis or implantation. Severing the ureter and bringing the proximal end to the surface had been employed, but one could hardly imagine conditions under which one of the other methods would not serve a better purpose.

Spontaneous Hematoma Occurring in a Case of Spindle Cell Sarcoma of the Kidney.—Dr. Frank K. Boland, of Atlanta, Ga., said that the present case was spoken of as spontaneous hematoma instead of spontaneous rupture, because the hematoma, on account of its enormous size, was the outstanding picture rather than the comparatively small rupture. The case was unique for two reasons: First, because he had been unable to discover in the literature the report of a similar condition occurring in a neoplasm of the kidney; second, because the rupture of the kidney and formation of the hematoma were the first signs of the disease manifested in the case. Previous to this time the patient had been in good health, and presented no symptoms which would lead one to suspect her of having anything wrong with her kidney. Apparently the rupture occurred early in the course of the disease.

Significance of Pain in the Back.—Dr. Robert Carothers, of Cincinnati, stated that pain in the back was a reaction to irritation of nerves, caused either by direct pressure on the cord or its nerve trunks or indirectly reflected from elsewhere. The flat feet and buck knees were seldom without muscular and ligamentous strain in the back and pain which was relieved with proper treatment. Careful measurement of both legs in complaining patients would sometimes reveal that one leg was half an inch, perhaps an inch, longer than the other. A raised heel on the short leg usually proved the remedy to relieve a painful back in not a few subjects. In the listing spine, nerve trunks formerly pinched were now free. In diseases of the spine, pain was an incentive to study the case, and an early diagnosis which was so essential to success was not infrequently made, long before destruction occurred and treatment was given a chance to succeed.

Chronic Obstructive Jaundice.—Dr. William A. Downes, of New York, stated that all patients suffering from chronic obstructive jaundice should be operated upon, as surgery offered the only hope of relief. Internal drainage of the bile ducts was preferable to external drainage, in the same way that it was desirable, when possible, to anastomose around inoperable growths in the intestine to avoid the formation of an artificial anus. The slightly greater risk involved in anastomosing the gallbladder over simple drainage was more than offset by the increased comfort of the patient plus the added advantage of retaining the biliary secretion. Besides, in the event of a cure by external drainage, a secondary operation was necessary to close the fistula. Personally, he found it easier to unite the gallbladder to the stomach than to the duodenum, and since the passage of bile through the stomach was harmless, considered cholecystogastrostomy the operation of choice.

Typhoidal Osteomyelitis.—Dr. Nathan Winslow, of Baltimore, stated that persistent bone pain with a history of a previous typhoid fever should suggest the possibility of a typhoidal osteomyelitis. In suppurative bone disease a careful investigation of the bacteriology of the pus was necessary for an accurate diagnosis. When suppuration occurred surgery offered the patient the surest and quickest road to complete cure. Vaccinotherapy had been used with success in a few cases, both suppurative and nonsuppurative, with and without operation.

Fractured Spine.—Dr. Walter C. G. Kirchner, of St. Louis, said that in fractures of the spine too much stress had been laid on the diagnosis and treatment of the lesion itself, and not enough attention had been paid to matters relating to the welfare of the patient as a whole. As a basis for discussion he cited a case of pronounced fracture and dislocation of the fourth and fifth lumbar vertebræ in which there was complete paralysis of the lower limbs with loss of bladder and rectal function. In spite of high grade decubitus, emaciation and weakness, by careful handling and persistent attention to

detail, great improvement in the patient's condition resulted. The primary care of the patient must receive special attention. Treatment must be directed to the control of shock, the correction of deformity, relief of pressure on the cord, the prevention of sepsis, decubitus, and a state of inanition. The patient's mental state must receive attention. From the beginning, catheterization of the bladder should be avoided. Intelligent and painstaking nursing and mechanical measures were important factors in aiding improvement or recovery.

Papilloma and Adenoma of the Gallbladder.—Dr. Irvin Abell, of Louisville, Ky., stated that benign tumors of the gallbladder, notably papilloma and adenoma, were not so rare as formerly thought, occurring in the Mayo series once in every twenty-three and one half cases of cholecystectomy, and once in every thirty-six cases of the series he reported. The invariable presence of chronic inflammatory changes in gallbladders containing such tumors would argue the importance of chronic irritation as an etiological factor in their development. The overshadowing clinical picture was that of cholecystitis, there being no correlation of symptoms with the presence of such tumors. The fact that such tumors occurred in the course of chronic cholecystitis was an additional argument in favor of cholecystectomy.

The Influence of Hemorrhage on the Mortality in Gunshot Wounds and Other Injuries of the Abdomen.—Dr. James M. Mason, of Birmingham, Ala., said that the mortality of 88.8 per cent. in the large hemorrhage series, as compared with 31.5 per cent. in the small hemorrhage series, taught that our treatment of hemorrhage must be improved. Transfusion must be more extensively employed. Autoreinfusion should be practised in selected cases. If cases were seen early and observation indicated that hemorrhage was not progressive, operation might even be deferred a short time, while waiting for reaction, and while efforts were being made to obtain donors for transfusion.

Traumatic Brain Lesions.—Dr. E. Dunbar Newell, of Chattanooga, Tenn., said that a stereoscopic x ray picture should be taken of every head injury where the blow had been sufficient to cause a fracture of the skull or to render the patient unconscious. Fracture of the skull *per se* did not indicate that the patient had been seriously injured, with the symptoms of lesion of the brain or its membranes present, the absence of a fracture did not alter in the least the treatment nor the prognosis. The x ray not showing a fracture of the base did not mean that one did not exist. Basal fractures must not be considered hopeless cases.

Important Considerations in the Treatment of Fractures of the Shaft of the Femur.—Dr. Albert O. Singleton, of Galveston, Texas, stated that the early reduction of fractures of the femur under spinal anesthesia with the aid of the fluoroscope or x ray plates, and by placing the splint in position before reduction, would succeed in a number of instances in securing and maintaining good position. The Thomas splint was the splint of choice with provision for flexion of the knee. Extension was necessary in all cases, whether open or closed reduction, and whether or not plates or other methods of fixation of the bone were used. Skeletal extension or traction was superior to the skin when there was overriding of the fragments, particularly in fractures of the lower end of the femur. It was important not to neglect the muscles, tendons and joints and allow them to suffer from disuse and atrophy.

Chronic Ulcerative Colitis.—Dr. Harvey B. Stone, of Baltimore, said that patients with chronic ulcerative colitis presented a history of bowel trouble extending back for months and sometimes for a number of years. The onset might have been abrupt with acute dysentery or gradual and insidious. Often there were periods of improvement, sometimes of apparent cure, followed by recurrence and another cycle of improvement. The severe attacks were marked by numerous bowel movements—perhaps twenty or more a day—consisting largely of mucus, pus and blood. During these exacerbations there was loss of weight, abdominal pains, often severe, usually some fever, and marked weakness. Eating became difficult for these patients, not only because of complete loss of appetite, but even more because the entrance of anything into the stomach started immediate reflex peristalsis in the colon with sharp pain and urgent desire to defecate. Should the severe manifestations of the condition continue long, the patient became gravely ill, and it was not impossible for a fatal result to ensue. One of the striking clinical characteristics of chronic ulcerative colitis was its chronicity and recurrent nature. When it resisted medical treatment or became severe, operation was indicated. Ileostomy and separate appendicostomy for colon irrigations, with exclusion of the colon from function, offered the best results.

Patency of the Fallopian Tubes Ascertained by Transuterine Injection of Fluids.—Dr. I. S. Stone, of Washington, D. C., said that the method was first tried during the operation upon a young woman with acute bilateral salpingitis and appendicitis with extensive pelvic peritonitis. He was impelled to pursue a conservative course because the patient was expecting to be married in the near future. At that time it was considered folly to leave a tube which was dripping with pus, yet he allowed the left tube and corresponding ovary to remain *in situ*, although the specific nature of the infection was beyond question (the responsible party confessed it). After opening the abdomen and removing the right tube and ovary with the appendix, all of which were hopelessly destroyed, he proceeded with the injection. The cervix uteri was caught with a tenaculum forceps, a large glass syringe filled with hot mercuric bichloride, 1-1000, was introduced into it and passed through the internal os. Firm pressure with the hand caused a small stream of the solution to appear at the pavilion, which was caught upon a sponge and not allowed to flow into the abdomen. Besides the transuterine irrigation of the left tube, the same solution was used to irrigate its distal end by distention and flushing until he reached every possible fold in its mucosa. After a stormy first night the patient recovered, married, and bore her first child nine years afterward, and a second child two years after that.

(To be concluded.)

Abstracts from Current Literature

ENDOCRINOLOGY.

Normal and Morbid Conditions of the Adrenals with Special Reference to Dementia Precox.—Frederick W. Mott and Isabel Emslie Hutton (*British Medical Journal,* July 21, 1923) found the most constant change in the medulla of the adrenals in dementia precox to be an increased number of nuclei, irregularity of their size and form, and the deficiency of chromatin. There was, moreover, an increase of fibrous tissue which often took a pericellular arrangement and an increase of fibroblastic nuclei. In tuberculosis, there may be a great diminution of cytoplasm, but these nuclear changes are not seen. In general paralysis, the nuclear changes are not observed and the cytoplasm as a rule is not affected to any extent.

Function of the Parathyroids.—Harold A. Salvesen (*Journal of Biological Chemistry,* June, 1923) believes that calcium deficiency is the cause of the symptoms of parathyroidectomy, and that the theory of MacCallum and Voegtlin is probably correct. This is shown by the chemical findings of the blood in parathyroid insufficiency, experiments to determine the fate of calcium salts injected in tetanic dogs, and experiments on completely parathyroidectomized dogs preserved by calcium treatment. The conclusion is reached that the parathyroids control the calcium level of the blood, and by doing so, they influence the function not only of the muscle and nerve tissues, but probably of all the organs.

Importance of the Adrenal Glands in the Action of Certain Alkaloids.—Charles W. Edmunds and Putnam C. Lloyd (*Journal of Laboratory and Clinical Medicine,* June, 1923) conclude from experiments on dogs that the increase in the number of leucocytes and the change in the relative proportions which are produced in intact normal dogs by strychnine are due to the effect of the alkaloid upon the adrenal glands, that is, they are epinephrin effects. The number of red cells was not greatly altered as the amount of epinephrine produced is comparatively small, and to modify the number of erythrocytes, a large amount of epinephrin is required.

Goitre Problem.—As a result of the favorable impression created by his previous experience in the prophylaxis and treatment of goitre with sodium chloride added to definite amounts of potassium iodide, Otto Bayard (*Schweizerische medizinische Wochenschrift,* July 26 and August 2, 1923) administered iodized sodium chloride to the entire population of two villages, comprising 561 and 577 inhabitants, respectively. The amounts were 0.02 gram potassium iodide to five kilograms of cooking salt a year for each person. Soft goitres diminished distinctly and the younger the patient the more marked the recession. Goitres that were uninfluenced by this dose diminished in size by increase of the dose to 0.1 gram potassium iodide, without causing any unpleasant complications. For the purpose of a general prophylaxis of goitre in Switzerland, the author recommends a dose of 2.5 milligrams of potassium iodide to 5.0 kilograms of salt during the first year and an increase to 5.0, 7.5 and 10.0 milligrams in the succeeding years. He believes that more than half of the cases of cancer in Switzerland may be avoided by means of the prophylaxis of goitre, because the injuries resulting from hypothyroidism and the changes in the thyroid gland lead more readily to cancer.

Influence of the Thyroid Gland on the Response to Adrenalin.—D. Murray Lyon (*British Medical Journal,* June 9, 1923) states that in a comparison of the metabolic and cardiovascular responses to the injection of adrenalin in patients having similar basal metabolic rates, no relationship between the reactions is obvious. If individuals are examined on different occasions when their metabolic rates have altered, a change in the degree of response to adrenalin is noticed. Administrations of thyroid to a patient leads to an exaggeration of the reaction to adrenalin. In cases of exophthalmic goitre a fall in basal metabolic rate is not accompanied by a very great reduction in the sensitiveness to adrenalin, and it is suggested that this depends on a persisting hypertonus of the sympathetic system.

Anomalies of Carbohydrate Metabolism and Pancreatic Changes in Basedow's Disease.—In a study of 191 cases of Basedow's disease, Johan Holst (*Schweizerische medizinische Wochenschrift,* August 2, 1923) found diabetes in 2.1 per cent. of the cases, which must be assumed to be thyrogenic. He reports thirty-one cases, in which the carbohydrate tolerance was controlled and found not rarely that the diminution of the same ran parallel with the symptoms of Basedow's disease, and that patients who were favorably influenced by operation lost their glycosuria. In ten necropsies the pancreas showed changes and the number of islands of Langerhans were diminished. The author's results indicate that there is much to be said in favor of the theory that the products of the goitre, as a result of their incitatory effect upon the adrenalin, call forth mostly a functional, but occasionally, an anatomical affection of the pancreas. It may be assumed that this thyrogenic affection of the pancreas is the cause of the anomalies of the carbohydrate metabolism in Basedow's disease.

Involvement of the Nervous System in Malignant Disease of the Nasopharynx.—Henry W. Woltman (*Medical Clinics of North America,* July, 1923) states that malignant tumors of the nasopharynx are more common than is generally believed. The early symptoms are often entirely extranasopharyngeal and in fully one third of the cases lie in the field of the neurologist. In all cases of unexplained cranial nerve palsies, or in paralysis of groups of cranial nerves constituting well known syndromes, such as those of Jackson, of Avellis, of the jugular foramen, of the retroparotid space, and in cases of metastasis to distant parts of the body, the nasopharynx should be carefully examined by an expert. Pituitary tumor may be simulated, and all patients under examination for pituitary tumor should have an examination of the nasopharynx.

The resemblance of these cases to those due to primary involvement of the gasserian ganglion is often very close. A close cooperation between the rhinologist and the neurologist is most essential if ill advised operations are to be avoided.

Indications for the Surgical Treatment and Prophylaxis of Goitre.—B. Breitner (*Wiener klinische Wochenschrift,* March 22, 1923) asserts that merely the size of the goitre is rarely an absolute indication for operation, but that ptosis of the gland may be an indication. The transplantation of a substernal portion of the gland subcutaneously or subperitoneally may be required. Aside from the mechanical indication for surgical intervention (compression of the trachea or of the esophagus) as demonstrated röntgenologically, resection of a hyperthyrotoxic goitre should be done only in case of a diffuse colloid goitre without involvement of other endocrine glands. In the presence of a persistent thymus, pluriglandular insufficiency is probably also present and therefore an additional resection of the thymus is recommendable. In the presence of small, very vascular goitres, surgical intervention should be restricted and röntgenotherapy is preferable to the more difficult ligation of the thyroid arteries in these cases. The prophylactic treatment with iodine is favorably recommended.

Endemic Goitre in Lower Austria.—Johann Geringer (*Wiener klinische Wochenschrift,* March 8, 1923) comes to the conclusions that: 1. Goitre is a constitutional anomaly in certain regions, to which the female sex is particularly predisposed and which is usually transmitted with the parental germ plasm. 2. The absence or slight occurrence in the plains and its occurrence in the regions lying at a higher altitude speak in favor of an endemic disease, which is chiefly distributed in the higher altitude. 3. The cause of the occurrence seems to lie in a lack of ingestion of iodine. 4. Goitre often appears in the earliest youth, which fact justifies the assumption that the anomaly is transmitted even with the hereditary characteristics in these cases. 5. The assumption of an infection is not tenable. 6. Owing to the endemic nature, it is advisable to institute a course of iodine treatment with daily administrations of cooking salt, which course should be continued as long as the person who is affected with goitre or threatens to become so resides in the goitre region. 7. All goitre regions should receive only cooking salt having an iodine content of 0.004 per cent.

Thyroid Enlargement in Individuals without Sympathomimetic Manifestations.—Leo Kessel and Harold Thomas Hyman (*American Journal of the Medical Sciences,* March, 1923) say that the rôle of the thyroid in the production of clinical symptoms is greatly overemphasized. Of the fifty-five patients recorded in this paper forty-one had had attention specifically directed to the thyroid gland. Either the symptoms were attributed to a disturbance of the function of the gland, while the true pathological condition that was operative was overlooked, or else specific therapy was directed toward the thyroid without any relief of symptoms which could not possibly have been caused by thyroid disturbance.

Functions of Adrenal Glands and Their Relation to Concentration of Hydrogen Ions.—As a result of his observations, Robert McCarrison (*British Medical Journal,* January 20, 1923) concludes that the enlargement—with epinephrin content—of the adrenal glands in inanition and in avitaminosis may be correlated with the condition of acidosis associated with these states. Its occurrence, for the most part, during the terminal phases of avitaminosis, its association with marked respiratory disturbances, with oxygen want, with falling body temperature, and with interference with oxygenation, and its rapid disappearance on the provision of the missing vitamines, suggest that it is an emergency effort on the part of the adrenal glands. The attempted exercise of an emergency function by the adrenal glands may be expected to occur in all conditions of alkalosis or of acidosis.

Organotherapy in Neuroses and Psychoses.—Wagner-Jauregg (*Wiener klinsche Wochenschrift,* January 4, 1923) discusses chiefly the results of therapy with thyroid and sexual gland substances in the hebephrenic type of dementia precox, disturbances during puberty (infantilism, tics in young persons, etc.). In cases of excessive onanism the author achieved favorable results with bilateral ligations of the spermatic cord, both in regard to the somatic as well as the psychic symptoms. Thyroid treatment is recommended in every case of retarded development of children. In a combination of tumor of the pituitary with a goitre or symptoms of hypothyroidism, thyroid may improve the pituitary conditions and even the hemianopsia. It is well to remember in connection with hypofunction and hyperfunction of glands that qualitative changes (dysfunction) may be present. Thyroid and sexual gland substances produced complete recovery only in girls in whom the psychosis began at puberty and sex development had been arrested in the infantile stage. Good results were also obtained in nervous girls with hypoplastic uterus and much delayed menstruation.

Thymic Asthma.—Hugh Thursfield (*Archives of Pediatrics,* February, 1923) is inclined to believe that there is such a condition as thymic asthma, but that according to all evidence, clinical, pathological and röntgenological, it is exceedingly rare. The diagnosis is by no means easy; the most convincing syndrome is the coexistence of dyspnea with a protrusion of the manubrium sterni, abnormal dullness to percussion in this region, and a palpable and visible tumor during inspiration in the episternal notch. Thymectomy is rarely indicated; röntgen therapy is preferable. In the rare cases where the diagnosis is reasonably certain, and relief is urgently required, thymectomy is an operation with good results and a fairly low mortality.

X Ray Thyroid Therapy.—R. G. Allison (*Minnesota Medicine,* July, 1922) reports twenty-seven cases of Graves's disease without complications treated by x ray. Of these patients twenty-four are well, both from the clinical and laboratory standpoint, and the other three were operated upon with cure. No bad results or complications attributable to the treatments were seen.

Precocious Puberty.—Mark S. Reuben and G. Randolph Manning (*Archives of Pediatrics,* January, 1923) summarize the findings in their personal cases as follows: The röntgenograms of the pituitary were normal in all patients and all showed ossification of the wrist centres. Mentality was normal in six patients; one was backward and one was mentally deficient. Sexual desire was present in only one patient. Physical development was advanced beyond the age in five of eight cases studied. All but one patient had enlargement of the breasts; all had pubic and axillary hair; five menstruated and all showed enlargement of external genitals. In two patients there was concomitant enlargement of the thyroid; in one, carcinoma of the ovary; in one, enlargement of the ovary; in one, hyperplasia of the adrenals, and in one, tumor of the pineal.

DIABETES

Influence of Insulin upon Acidosis and Lipemia in Diabetes.—In view of the results obtained by H. Whitridge Davies, Charles G. Lambie, D. Murray Lyon, Jonathan Meakins and William Robson (*British Medical Journal,* May 19, 1923), it appears that insulin and carbohydrates, when given together in sufficient amounts to patients with diabetic acidosis verging upon coma, have a most beneficial and indeed spectacular effect. The rapid disappearance of the lipemia and ketone bodies of the blood, and the return to normal of the bicarbonate reserve, clearly indicate the means whereby this improvement is brought about. A great increase in the blood sugar may have no deleterious effect, in fact an adequate supply of carbohydrate is most important in the treatment of these cases, and in view of the known deficiency of glycogenic function, this supply must mainly be available in the form of sugar in the blood and tissues. If it is true that the acidosis in diabetes is the result of imperfect oxidation of fat through the inability of the cells to use carbohydrate, such results are quite to be expected.

It is noteworthy that the reduction of the blood sugar is not always accompanied by such an increase of the respiratory quotient as might be expected if the sugar had been burnt. The determination or respiratory metabolism in emotional subjects may not give a proper indication of the true respiratory quotient owing to irregularities of the breathing. Yet in such cases there is another factor to be considered. The liberation of alkali in the blood consequent upon the removal of the ketone bodies would result in a compensatory retention of carbon dioxide. This might easily be sufficient in amount not only to mask any rise but even to produce a fall in the respiratory quotient.

Physiology of Insulin.—H. H. Dale (*Lancet,* May 19, 1923) believes that insulin will prove to have an importance for physiology and medical science far beyond that of its use in the treatment of diabetes. There are doubtless cases in which the natural function has been so completely lost that not even a partial recovery can be anticipated. In such cases, insulin can prolong life and make it more tolerable, but only at the cost of daily injections which can never be remitted or reduced. Such a result is, in itself, worth attainment, but something much better ought to be aimed at. All the experience accumulated before the introduction of insulin pointed to the possibility of restoring to many diabetics a reasonable measure of normal function by giving their overworked remnant of islet tissue as complete a rest as possible. In many cases this was only achieved by a restriction of diet which was almost unbearable, though still compatible with life. If insulin is now used simply to enable such patients to eat a large quantity of food so long as they can tolerate daily injections, they will get no permanent benefit and insulin will be wasted. On the other hand, if it is used as an aid to the régime of dietary rest, to enable these patients to obtain some recovery of normal function without such cruel reduction of their diet; if it is used to bring into this class, for which some measure of restoration is possible, others in whom, without insulin, no diet sufficient for life would keep the blood sugar down and give the overstrained islets a chance of recovery; then, indeed, it will be used to the real advantage of the patients, and be worthy of all the extraordinary enthusiasm which its discovery has aroused.

Histological Study of Muscle Degeneration Produced by Local Injections of Insulin.—D. J. Bowie and W. L. Robinson (*Journal of Laboratory and Clinical Medicine,* June, 1923) studied tissues from rabbits which had received intramuscular injections of insulin, and also of saline, glucose, and adrenalin solutions for comparison. Such injections produced near their site a marked degeneration of the muscular fibres with leucocytic infiltration. Isotonic saline, however, produced only slight localized areas of degeneration, though the hypertonic solution had an effect similar to insulin. The authors believe that the lesions indicated by their studies following intramuscular injections probably explain the considerable pain and discomfort that is not uncommonly complained of and it may be pointed out that if the lesions can be produced by hypertonic saline, it is altogether likely that they might become quite extensive when various therapeutic agents are used.

Insulin in the Treatment of Diabetes.—Frederick M. Allen (*Southwestern Medicine,* September, 1923) reports the results in the treatment of two hundred and fifty cases of diabetes with insulin. It was aimed to give every child enough food to grow and develop normally, and every adult enough food to carry on his regular labor while remaining at least five or ten pounds below the normal standard for his height. The patients who can attain this ideal by diet are the ones who do not need insulin. The allowances of protein and carbohydrate are fairly liberal, perhaps one hundred gm. of each for a diet of two thousand calories. There is no sound basis for diets disproportionately and uncomfortably high in fat and low in carbohydrate and protein; acidosis is most safely avoided by avoiding such diets. The quantities of carbohydrate and protein allowed are ample, not merely for the prevention of acidosis, but for general health and comfort. The insulin requirement is kept within moderate bounds by moderate limitation of total calories and body weight. Never more than seventy units a day were used in the treatment of any uncomplicated case of diabetes and the average dose in the entire series was below twenty units a day. Apparently, as a result of the more thorough pancreatic rest afforded

by insulin, a few patients have shown gains of tolerance beyond what seemed possible by diet alone. No actual cure and no tendency to prolonged progressive improvement have been observed. On the other hand, no downward progress, indicated by a need for reduced diet or increased doses of insulin, has occurred in any cases under thorough treatment. In conclusion, Allen states that it is feasible for patients at their homes to remain free from glycosuria and nearly free from hyperglycemia under combined treatment with diet and insulin. Overnutrition makes freedom from glycosuria difficult and exposes to acidosis, infection and other dangers. Insulin revolutionizes the results of diabetic treatment, but cannot atone for lax dietary methods.

Studies of Diabetes Mellitus.—William S. McCann, R. Roger Hannon, and Katherine Dodd (*Bulletin of the Johns Hopkins Hospital,* July, 1923) discuss the effects of iletin administered to ten children. One of the ten patients was entirely uninfluenced by it in the dose used, but the other nine derived some benefit from the treatment, measured objectively in terms of blood sugar values, decreased glycosuria, and in control of ketosis, as well as in the relief of symptoms. In most cases two injections daily were required. A wide variation in individual susceptibility to the effect of insulin was seen when the same lots of extract were compared in different patients. Complicating infections played an important rôle in this difference. When given subcutaneously, it has been the custom to use the amount which will render the urine sugar free for from twelve to thirteen hours with the patient on a bare maintenance diet. The patient is instructed to keep always at hand a small amount of carbohydrate to use in case of need. Orange juice is recommended, but cane sugar is much more convenient. Adrenalin to counteract an overdose of insulin is not recommended, because it is not reliable. The extra calories which patients were enabled to utilize to the unit of insulin varied from twelve to seventy calories, and the amount of extra carbohydrate which was utilized per unit varied from 0.5 to 3.6 gm.

Interrelationship of Blood Fat to Blood Sugar.—The work of T. H. Oliver and A. Haworth (*Lancet,* July 21, 1923) indicates that the blood sugar has a relation to the blood fat, other than that of a mere oxidizing agent. Fat properly absorbed into the tissues seems to increase the storage of carbohydrate; if not absorbed, or if mobilized by calcium, the storage is interfered with. Possibly improper storage of the fat may account for the tendency of a high fat diet to produce glycosuria in some cases of diabetes. Practically all conditions which lead to a hyperglycemia lead to lipemia as well; this may be attributed to a diminished oxidation. It has been possible to produce a distinct rise of blood fat in addition to a hyperglycemia by the injection of adrenalin (from 0.48 to 0.56 per cent.); in this case, at least, it is difficult to understand why the liberation of a large amount of oxidizing material should be accompanied by an increase of the substance to be oxidized. A more probable explanation is that both were stored and liberated together, an explanation which recent work on the effect of insulin in diminishing lipemia does much to confirm.

Hyperglycemia.—Henry M. Feinblatt (*Journal of Laboratory and Clinical Medicine,* May, 1923) found in the course of two thousand routine blood sugar determinations that eighty one patients yielded blood sugar readings in excess of 150 mg. to the 100 c.c. In forty two per cent. of the patients who showed hyperglycemia, clinical diabetes mellitus was demonstrated. In the other group of apparently nondiabetic patients, the presence of the abnormally high blood sugar could only be explained in a small percentage of cases. The author does not believe that a single report of an unusually high blood sugar can be considered pathological, since a transient hyperglycemia may result from emotional disturbances. A study of the cases emphasized the inconstancy of the relation between glycosuria and hyperglycemia.

Nature of Blood Sugar.—L. B. Winter and W. Smith (*British Medical Journal,* May 26, 1923) conclude as follows: 1. There is definite evidence that a reactive sugar is present in the blood. 2. There is no chemical evidence that glucose is formed in the body. 3. There is definite evidence that some of the blood sugar of diabetics is fundamentally different from that or normal persons. 4. No evidence at present exists that the intestine plays an essential part in the causation of this difference.

An Investigation of the Picramic Acid Methods for Blood Sugar.—Henry C. Sweany and Ethel M. Johnson (*Journal of Laboratory and Clinical Medicine,* May, 1923) used the more recent method of Benedict, and the Myers and Bailey modification as the most representative of the picramic acid methods, and for comparison, that of Folin and Wu. In addition to the determination of blood sugar, a definite quantity of sugar was added to each blood filtrate and the amount recovered was estimated. The copper reduction methods and the picramic acid methods showed serious discrepancies in certain pathological subjects. The presence of phenol or potassium phenyl sulphate in blood produced a false sugar result with the picramic acid methods. The results of this work indicate that the modified method of Folin and Wu has many advantages over any of the other methods studied. The authors suggest that the picramic acid methods may be used to determine the presence in the blood of "reducing substances other than glucose."

Report of a Case of Diabetes Treated with Insulin.—In a detailed study of a moderately severe case of diabetes, by E. I. Spriggs, D. V. Pickering and A. J. Leigh (*British Medical Journal,* July 14, 1923), in which tolerance had been diminishing for the last three years, it was found that with the help of two daily hypodermic injections of insulin, on a measured diet, the excess of sugar in the blood, the sugar in the urine, and the acidosis could be controlled; also that the patient could take more than double the amount of food he had previously been able to take without the appearance of sugar in the urine. Regulation of diet is still needed, for if an excess food was taken above the new and higher level of tolerance, the hyperglycemia, glycosuria, and acidosis reappeared. The treatment led to improvement in the nutrition, physical capacity, mental outlook, and appearance of the patient.

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Medicolegal Notes.

WORKMEN'S COMPENSATION.

A claimant under the New York workmen's compensation act, who had received the amount of an award thereunder for injuries sustained by falling from a piazza roof, sued the physician who treated him for malpractice. The New York Supreme Court, Special Term, Warren County, sustains the defendant's contention that the plaintiff's remedy under the workmen's compensation act, having been accepted, is exclusive, and bars an action against the physician. "There can be but one recovery for the same wrong. Satisfaction by one joint tort feasor has always been considered a bar to an action against another. . . . The workmen's compensation law does not alter this just and salutary principle." The employer having responded in full for the injury, including the malpractice claimed, if any action lay against the physician, it was held to be one in favor of the employer, who had been subrogated to such right.

HYPOTHETICAL QUESTIONS ON CROSS EXAMINATION.

The Indiana Supreme Court holds McHargue v. State, 139 N. E. 316, that hypothetical questions on cross-examination of an expert witness should be limited to taking his opinion upon matters of which there is some evidence, at least, except as the trial court, in its discretion, may permit questioning to test the knowledge and skill of the witness.

But within the facts of which there is any evidence at all when an expert witness has expressed his opinion based on facts assumed by the part introducing him to have been established by proof or upon a hypothetical case put by such party, the other party may cross examine him by taking his opinion based upon any other set of facts assumed to have been proved by the evidence, or upon a hypothetical case put by the cross examiner.

X RAY PLATES IN EVIDENCE.

A physician, who was a specialist in the use of the x ray, called as a witness by the plaintiff in an action for personal injuries resulting from being run over by an automobile truck, testified respecting certain x ray pictures purporting to be of the plaintiff's pelvic region (where the principal injury claimed by her existed), which were explained by the witness in response to questions by counsel for defendant. The witness testified that the x ray plates showed an abnormal condition of the pelvis, particularly with reference to the relation of the bones, some of which were alleged to have been fractured. The witness produced another x ray plate, which he testified showed the pelvic bones of a normal person. This plate was admitted. Its admission was the subject of an exception by the defendant.

The Massachusetts Supreme Judicial Court holds, McGrath v. Fass, 139 N. E. 303, that, since it is well settled that an x ray plate showing the physical condition of a plaintiff in an action for personal injuries is admissible, there is no valid reason why a plate of another person properly verified by proof which showed the pelvis in its normal condition, was not competent to assist the jury in understanding the nature and extent of the plaintiff's injury, in the same way that a skeleton is often exhibited in similar cases. Whether the plate was sufficiently verified was a question of fact for the trial judge.

HYPOTHETICAL QUESTIONS AS TO CAUSE OF DEATH.

On a trial for murder, a doctor was asked, on cross-examination, the hypothetical question whether, if a man was found lying beside the roadside with two black eyes, one entirely and the other almost closed, and bruises on his nose and the back of his right hand and bruise marks on his elbow, and between his hand and his elbow, and if he had been lying there fourteen hours and then died, and if, when his skull was taken off, a large blood clot was found covering the left hemisphere of the brain and having a maximum thickness of three quarters of an inch, and entirely between the dura mater and the pia mater, and if it all slid off without adhering to anything, whether he thought there was any chance of the clot having been due to apoplexy. He answered that it would not be apoplexy. The Massachusetts Supreme Judicial Court holds, Commonwealth v. Williams, 139 N. E. 347, that the hypothetical question was properly admitted.

But a question on direct examination to a witness for the defendant, who testified that he had heard the medical evidence introduced by the state, and, from the evidence he had heard, had formed an opinion as to the cause of death, "What in your opinion caused the death of Decker?" was held rightly excluded, for the reason that the facts upon which he was expected to base his opinion were not stated, and medical and other evidence were conflicting.

WORKMEN'S COMPENSATION ACT FOR MEDICAL SERVICES.

The Louisiana Supreme Court holds, Delaney v. Ferd. Brenner Lumber Co., 97 So. 349, that an employer, or his insurer, who makes payments for medical, surgical and hospital service in excess of the amount provided therefor by the workmen's compensation act must obtain the employee's express consent in order to be entitled to reimbursement.

CONSTRUCTION OF MISSISSIPPI PRIVILEGE STATUTE.

In an action for personal injuries it appeared that the plaintiff was treated by one physician, and examined but not treated by another. The latter at plaintiff's instance testified as to his injuries. The defendant on objection by the plaintiff was not permitted to prove by the other physician what his examination and treatment of the plaintiff disclosed. The Mississippi Supreme Court holds, Brookhaven Lumber & Mfg. Co. v. Adams, 97 So. 484, that under Section 3695, Mississippi Code 1906 (Hemingway's Code, Section 6380), a physician is incompetent to testify to facts which come to his knowledge by virtue of his being employed by his patient as a physician, without the consent of the patient; and the patient does not waive the privilege because he introduces another physician who testifies for the patient about the same facts.

INDICTMENT HELD NOT TO STATE OFFENSE UNDER HARRISON ACT.

The Circuit Court of Appeals, Fourth Circuit, holds, Pendleton v. United States, 290 Fed. 388, that an indictment alleging that while the accused was a practising physician and a person required to register under the Harrison Anti-narcotic Act, he had in his possession 2.31 grains of morphine, although he had never registered, charged no offense. "It did not," the court said, "attempt to set up any violation of sections 1006 et seq. of the Revenue Act of February 24, 1919, 40 Stat. 1130. It was obviously drawn under the original Antinarcotic Act (38 Stat. 785) which the Supreme Court years ago held did not penalize the mere possession of narcotics. U. S. v. Jin Fuey Moy 241, U. S. 394. The court gains no added strength from the allegation that the defendant was a practicing physician. As such, he was not required to register unless he dispensed narcotics. There is nothing in the record to show that he did."

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Synergistic Anesthesia and Analgesia in Surgery

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The term synergistic anesthesia means the reciprocal augmentation of the action of one or more drugs upon one another with unconsciousness. Synergistic analgesia is the term employed when consciousness is present.

ADVANTAGES.

Magnesium sulphate, nitrous oxide and oxygen, and morphine have each proved dangerous and unsatisfactory when used alone and to the point of saturation. To avoid the dangers of nitrous oxide and oxygen when used alone, and to secure the relaxation demanded by the surgeon, in the vast majority of administrations a little ether is necessary for complete relaxation. Exactly what is meant by just a little ether may be determined by the size of the ether container attached to any apparatus, varying from a four ounce container to a quart measure. Nitrous oxide oxygen is uneven in results and is unsatisfactory in about fifty per cent. of cases, even to dentists. Charles K. Teter, of Cleveland, one of the pioneers of modern gas oxygen anesthesia for general surgery, as well as dentistry, uses a small amount of warmed ether with every dental patient. M. Ecker, a dental specialist of New York, after an experience with over fifty-five thousand cases, now uses synergistic methods, passing the nitrous oxide oxygen over a fifty per cent. mixture of anesthol and paraldehyde. He has at present over fifteen thousand synergistic cases to compare. His opinion is therefore valuable.

He states that each patient receives in addition to the nitrous oxide and oxygen only a few drops of the mixture, but the result is a safer and deeper anesthesia, free from cyanosis and excitation, with no movement or flinching during the operation rendering holding straps unnecessary for the heretofore fifty per cent. of unsatisfactory cases. With the synergists the patient is pink from start to finish, recovery is smoother, with less after hysteria than with the straight nitrous oxide and oxygen. As a sequence to the increased safety, ease and comfort of operating upon an unflinching patient, the physical and nervous strain upon the operator under the old system is entirely removed, and this conservation of energy is a factor that should not be ignored.

Until this time, the only way to avoid ether for general surgical cases and obtain a satisfactory nitrous oxide oxygen anesthesia was by using nitrous oxide oxygen asphyxial anesthesia, or some preliminary medication, usually morphine. By administering the hypodermic tablet in a solution of magnesium sulphate instead of plain water, we can usually eliminate the unpleasant aftereffects that sometimes follow morphine when given in sterile water, in addition obtaining a much longer analgesic effect.

Magnesium sulphate used alone is not a satisfactory anesthetic for human beings. Morphine scopolamine anesthesia, according to Wood (1), in 1906, had a mortality of one death in 221 administrations. But Thorek (2), in 1921, states that this method is safe. On the other hand, a study of half a million administrations in the United States shows conclusively that sequences and combinations immediately increase the value of all anesthetics as regards life. Neither nitrous oxide and oxygen, nor magnesium sulphate, nor morphine are deleterious to the tissues of the human body, nor do any of them have an affinity for any special organ. Meltzer's laboratory experiments with magnesium sulphate over a period of thirteen years would seem to prove this. It has also been proved clinically by the analysis of the liver of a patient who had received four hundred c.c. of a four per cent. solution of magnesium sulphate by hypodermoclysis, and who died on the operating table from hemorrhage after the right auricle was accidentally wounded. There was found to be 13.8 milligrams of magnesium to the 100 grams of dried liver, or as the liver is seventy-five per cent. water, 3.45 milligrams to the 100 grams of non-desiccated liver, i. e., about normal.

The statement by a recent writer that magnesium sulphate has a special affinity for the liver is evidently based upon an inaccurate analysis. Rector (3) made the magnesium blood determinations on five

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patients according to the method of Kremer and Tisdal, at hourly intervals for a period of four hours. It was found that the magnesium reached its maximum concentration in the blood within one hour after its administration and thence gradually diminished returning to normal at the end of four to five hours. In the five cases the normal magnesium content of the blood was found to average between three and four milligrams to the 100 c.c. of serum. (Chart I.) The three agents, morphine, magnesium sulphate and nitrous oxide and oxygen, used synergistically, produce analgesia with unconsciousness and give full relaxation of the muscles with a greater margin of safety than the usual deep third stage anesthesia with nitrous oxide oxygen alone. The relaxation by these synergists is comparable to spinal analgesia, which gives a more complete brain block than any inhalation method heretofore used, but avoids the dangers of this latter method.

Two avenues of administration are available, one by hypodermoclysis beneath one or both breasts and the other by sigmoid instillation. Formally we give thirty c.c. of chemically pure twenty-five per cent. solution of magnesium sulphate under one breast besides the quarter grain morphine that the patient was given by hypodermic injection. We soon discontinued the administration of the magnesium sulphate by hypodermoclysis because it was rapidly absorbed and so enhanced the action of the morphine that we had had several cases of morphine poisoning from one quarter of a grain of morphine. At the present time we are using the sigmoid instillation method exclusively. The night before operation the patient is given a cleansing soapsuds enema, and this is repeated at seven the following morning. At 7:30 the patient is given by rectum two hundred c.c. of a four per cent. solution of magnesium sulphate with four drams of paraldehyde, and which is allowed to remain in the sigmoid. At the same time the patient is given one eighth of a grain of morphine by hypodermic injection which is repeated in twenty minutes and a third injection given twenty minutes later which makes three eighths grain of morphine which the patient has received. By 8:30 the patient is drowsy and can be taken to the operating room. For vaginal work no inhalation anesthetic is necessary, as a rule, but if the abdomen is open a few inhalations of nixtrous oxide oxygen is required to make the skin invision, division of fascia and peritoneum. The inhalation may then be omitted for the entire operation, again it may be necessary to use it intermittently during part of the time occupied by operative procedure. Occasionally when much traction of the viscera is necessary a little ether may have to be added to the nitrous oxid oxygen.

FURTHER ADVANTAGES.

1. The sedative action is prolonged to such an extent that morphine postoperatively is rarely needed.
2. There is little paresis of the intestines and less acidosis; nausea and vomiting are practically eliminated, except when the gallbladder has been emptied or removed.
3. The amount of ether is lessened, thus reducing to a minimum bronchial and renal irritation and also causing less acidosis.
4. No deleterious results follow the use of synergists.
5. There is no distention and no gas pain.
6. The preoperative emotional factors do not appear, as the patient is convinced that the disagreeable effects and aftereffects of the inhalation anesthetic will not occur. The fear, dread and anxiety of the operation room is not present, as the patient does not know when he is to be taken from his bed. The exhaustive effect of surgical trauma is almost completely abolished, an analgesia begins one hour

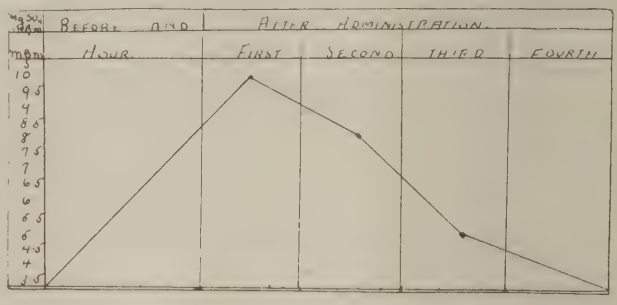

CHART I.—Showing the magnesium concentration in the blood (Rector) with rapid elimination and return to normal after four hours.

previous to operation measure, and continues for half an hour to one hour following the return to bed.

Vomitus is seldom seen following return to consciousness, when cracked ice is given with no ill effects. The return to bed is followed by quiet, restful sleep, interrupted only by individual desires, or obedience to instructions. The changes in pulse, respiration and blood pressure, in their respective phases, are most constant in proportional difference.

The most conspicuous result in using synergistic analgesia, with and without inhalation anesthesia, is the total absence of shock or exhaustion. In a wide range in abdominal, pelvic and plastic surgery there has been no untoward incident chargeable to the synergistic combinations.

CONCLUSIONS.

When properly given and safeguarded, certain things are common to the two methods outlined.

1. The patient's condition, when brought to the operating room, varies from a seemingly normal condition to unconsciousness. The conscious patient may answer questions intelligently, immediately before and after operation, but when placed in bed will rest quietly for several hours. Upon awakening he remembers little or nothing of the operation, and in fact some patients do not know they have been operated upon until told.
2. Nausea, vomiting, wound and gas pain are more nearly eliminated by synergistic methods than by any third stage inhalation method, even the best.
3. When supplemented by nitrous oxide oxygen or by ether given to unconsciousness, or by local analgesia, the patient is not cyanosed at any time, neither is the alkali reserve even temporarily lowered. These two factors may account for the absence of nausea and vomiting in so many cases.

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A Contribution to the Etiology of Asthma*

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During the course of activities on the problems of protein sensitization, it was found that a not inconsiderable number of cases after extremely careful examination did not fall into one of the groups of pollen, epidermal, food, dust or bacterial sensitizations. However, an outstanding feature in these patients in the anamnesis was a strikingly similar history of digestive disturbance—irregular diarrheas, periodical constipation, nausea, headaches, vomiting, etc.—and in addition, asthmatic or urticarial symptoms, or both. After careful clinical and laboratory examinations two prominent features were generally encountered. One, an indicanuria; the other protein putrefaction in the freshly voided stool (acid stool and excess of gram negative organisms with few or no gram positive organisms. The indicanuria at times was only faint and in a few cases absent, the putrefaction being invariably present.

Upon the basis of these findings, the possibility of some protein cleavage product or products, developing during digestion and inducing a susceptibility, suggested itself. During intestinal activity, histamine as one of the cleavage products of protein hydrolysis, and as a probable precursor of those aromatic bodies which appear in the urine and feces, looms as important.

Histamine is an amine and was discovered in 1907 by Windhaus and Vogt, who prepared it synthetically from aminazolylpropionic acid. Subsequently it was isolated by different workers from ergot, soya sauce and soya beans. In 1910, Ackermann obtained it from pure histidine hydrochloride by the action of putrefactive bacteria. Mellanby and Twort next described a method for the isolation of a bacillus of the colon group from the contents of the intestine of man and other animals which is capable of converting histidine into histamine. With certain similar researches carried on at about the same time by various investigators, the conclusion soon gained ground that histamine formation in the intestine was the result of bacterial activity. Abel and Kubota, however, although accepting the possibility of histamine formation from bacterial activity, "found a histamine like substance in so many proteins of both animal and vegetable origin, that the bacterial formation of the base may well be considered negligible." Abel and his coworkers, in some brilliant researches, showed among other findings that the active principle of pituitary extract appeared to be histamine. They also isolated it from Witte's peptone and from various tissues, secretions, etc., of lower animals. Their theories and conclusions, while perhaps not acceptable to all in their entirety, are nevertheless well worth serious perusal and careful consideration. Among their findings one statement may be mentioned as applicable to the problem under consideration. Man takes into his digestive tract a certain amount of preformed histamine with each meal, but as the result of digestion, experimentally shown by Abel and Kubota, an additional quantity of this base is formed. Some interesting conceptions and theories are also given concerning the necessity of this substance (histamine) in the physiological economy of the organism, which, however, it is not necessary to enter into here.

Histamine as a probable factor in the causation of traumatic shock has been considered by various investigators, and the work of Dale and Laidlaw, Dale and McIntosh, Bayliss, Cannon, a number of French army surgeons, and latterly Abel, must be consulted, as the subject is beyond the province of this paper. Toxic effects from the amine have also been produced by Dale and Laidlaw, Olhume, and others.

Lastly, the possibility of histamine as a factor in the production of anaphylaxis has been suggested. It is the rôle histamine plays in this condition that forms the subject of this paper.

With these observations in mind, an attempt was made to study a group of patients along certain lines. This group, for lack of a better name, was called tentatively endogenous asthma, or allergy. Solutions of chemically pure histamine obtained from Kahlbaum were made in various strengths, 1-500 to 1-100000 dilutions. These solutions were used in testing out the groups of patients by the scratch method. It was finally found that a dilution of 1-10000 was the best strength to employ for testing purposes. The details of this method are familiar to all, hence the conclusions only are given. All persons react to histamine in some degree when the latter is introduced into the skin. The reaction, however, is two to three times more intense—speed; extent; wheals (fifteen to thirty mm. in diameter), intensity of the reaction—in individuals who manifest symptoms of endogenous asthma, than in those who apparently do not suffer from histamine sensitivity.[1]

Chemical analyses of the blood were made according to the methods of Folin. Routine stool analyses carried out according to the methods of Schmidt, Herter, and others, for the determination of putrefaction, fermentation, etc., and the bacterial examination of the intestinal flora. The twelve cases tabulated in the chart are illustrative of the type of cases, the principal symptoms and the result of examinations.

The principal points in the history may be summarized as follows: Patients with socalled endogenous asthma do not as a rule react to the various proteins tested, but give an exceptionally strong reaction with solutions of histamine (1-10000). Practically every person tested with histamine gives

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[1]Koessler in his studies on histamine, etc., carried out similar tests, but did not apply them for purposes of diagnosis.

TABLE I.

Case	Age	Sex	Principal Symptoms	Reaction to histamine metabolism	Blood pressure and basal metabolism[2]	Examination of faeces	Urine
CM. I.	40	F.	Asthmatic attacks at any time for last five years; constipated, headaches; several attacks of urticaria; no eczema or hayfever.		B.P.100/80 1. B.M. —8% 2. B.M. —2%	Reaction—acid. Putrefaction ++++ Fermentation + Bacteria—excess of gram neg.	Indican ++
HA. II.	48	F.	Asthma irregularly for fifteen years; urticaria, three severe attacks; constipated; no headaches; no hayfever or eczema.	++	B.P.110/82 1 B.M. —2% 2. B.M. +4%	Reaction—faintly acid. Putrefaction ++ Fermentation o Bacteria—many gram neg. bacilli.	Indican +
JEH. III.	22	M.	Asthma irregular for two years; frequent headaches and nausea; Often severe urticaria; no hayfever or eczema.	+++	B.P.90/60 1. B.M. —2% 2. B.M. —	Reaction—faintly alkaline. Putrefaction ++++ Fermentation o Bact. many gram neg. bacilli.	Indican o
AP. IV.	48	M.	(furrier), asthma, irregular attacks for five years; frequent headaches, malaise, nausea, occasional vomiting, constipated; no hayfever or eczema.	++++	B.P.110/90 1. B.M. —18% 2. B.M. —10%	Reaction—acid. Putrefaction ++ Fermentation + Bact. excess of gram neg.	Indican o
RM. V.	32	F.	Irregular asthmatic attacks with accompanying urticaria; headaches, nausea. Five years' duration.	++	B.P.95/78 1. B.M. —2% 2. B.M. +6%	Reaction—acid. Putrefaction +++ Fermentation o Bact. excess of gram neg.	Indican +
MH. VI.	51	M.	Marked urticaria at irregular intervals for four years; symptoms of dyspnea.	++	B.P.100/85 1. B.M. —8% 2. B.M. —2%	Reaction—acid. Putrefaction +++ Fermentation o Bact. many gram neg. org.	Indican o
JK. VII.	38	F.	Asthma irregularly for three years; several attacks of urticaria with nausea and vomiting; constipated, usually attacks of diarrhea precede an attack.	+++	B.P.110/80 1. B.M. —8% 2. B.M. +2%	Reaction—faintly acid. Putrefaction +++ Fermentation o Bact. many gram neg. organisms.	Indican o
MAH.VIII.	41	F.	Irregular attacks of asthma; generally commence in a. m.; no eczema or hayfever; two attacks of urticaria; always constipated; duration four years.	++	B.P.100/70 1. B. M. —2% 2. B.M. +4%	Reaction—faintly acid. Putrefaction ++ Fermentation o Bact. large number of gram neg. bacilli.	Indican o
MW. IX.	38	M.	Urticaria and asthmatic attacks for five years, headaches, nausea.	++	B.P.120/80 1. B.M. +8% 2. B.M. +14%	Reaction—faintly acid. Putrefaction +++ Fermentation + Bact. excess of gram neg. org.	Indican ++
EH. X.	39	F.	Headache, nausea, constipation with attacks of asthma and dyspnea; slight cough; no urticaria, eczema or hayfever; duration three years.	++	B.P.100/85 1. B.M. —2% 2. B.M. +2%	Reaction—acid. Putrefaction ++ Fermentation o Bact. many gram neg. bac.	Indican +
MTR. XI.	45	F.	Asthmatic attacks at irregular times for past fifteen years; urticaria during last two years; constipated with alternating diarrhea; no hayfever or eczema.	+++	B.P.115/85 1. B.M. —10% 2. B.M. +2%	Reaction—acid. Putrefaction +++ Fermentation o Bact. excess of gram neg. org.	Indican o
JM. XII.	28	F.	Asthma for past eight years, coming throughout year, worse in winter; urticaria at times, no hayfever or eczema.	++	B.P.95/70 1. B.M. +1% 2. B.M. +2%	Reaction—acid. Putrefaction ++ Fermentation o Bact. many gram neg. bac.	Indican o

[2] 1. B.M. indicates basal metabolism before treatment and 2. B.M., basal metabolism after treatment.

a wheal, but in cases of endogenous asthma patients give exceptionally large wheals (fifteen to thirty mm. in diameter). We have recorded the results of this test on our chart with one to four plus—one plus representing a wheal fifteen mm. in diameter, two plus twenty mm. in diameter, three plus twenty-five mm. in diameter, and any over twenty-five mm. as four plus. The patients frequently present such symptoms as poor appetite, moderate anemia, lassitude, malaise, and frequent headaches. Recurrent attacks of urticaria are common. Bowel evacuations are extremely irregular, usually quite sluggish. The blood pressure readings are usually low and these patients all seem to present an associated disturbance in the physiology of their glands of internal secretion.

The chemical examination of the blood shows nothing distinctive, except possibly an increased chloride content. The stool examination results usually in an acid stool with considerable albumin putrefaction with or without an associated carbohydrate fermentation. We generally find an excess of gram negative organisms.

The following brief outline of treatment was followed: Ten cases were treated with hypodermic injections of histamine, beginning with one minim of a solution containing a half mg. to the c.c. and gradually increasing this dose up to six minims of a solution containing two mg. to the c.c. We were unable to give any larger doses than this without immediately causing severe headache, flushing of face, weakness, urticarial rash, etc. Two of the patients were markedly improved while on the small doses, but became worse when the dose was increased. These patients subsequently made a complete recovery under peptone treatment, receiving injections twice a week for three months and no other treatment. They have been free from asthma for several months and a year, respectively, and skin tests with histamine show a markedly diminished reaction. The remaining patients were favorably influenced by peptone injections. Keeping the intestinal tract free from stasis is obviously necessary. Colonic irrigations and measures tending to a simplification of the intestinal flora are also indicated.

The author's references will appear in his reprints.

The 1923 Epidemic of Grippe*

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This subject is chosen for the purpose of bringing to the surface, through discussion, a clinical picture that is fresh in our minds. It is my hope that the observations noted herein will be so checked and amplified that we shall have formulated through this meeting a completely rounded conception of the epidemic of respiratory inflammation that has prevailed here and elsewhere during the winter just past.

It is important to begin by trying to decide what it is that we have been dealing with. To me it appears that it is not different from what occurs regularly every winter with greater or less frequency and severity. Just what is the primary etiological factor has not as yet been determined beyond question. I am strongly of the opinion that it is not identical with the pandemic that visited us during the late summer and autumn of 1918, and persisted throughout the ensuing winter, though I do believe that many of the cases called flu that winter were not cases of the specific epidemic, but were identical with what occurs every year.

Those of us who remember the epidemic of grippe of 1890-91 will recall that it was the common belief throughout the years which followed that those who had grippe were predisposed to recurrent attacks; that clinical types multiplied, the literature of that decade abounding with reports of intestinal grippe, grippe arthritis, grippe cardiopathies, grippe neurasthenia, etc.; and that at the same time observers began to lose the earlier impression of the intense infectivity of the disease, some asserting that it was very slightly or not at all communicable. And so the term grippe passed into the medical language of that generation as applying to almost any acute infection of the upper respiratory tract, and to a number of other disorders, losing entirely the meaning it had when it was originally introduced with the original epidemic.

This history seems to be repeating itself in the case of flu, which is the popular designation of the epidemic of 1918. I feel that it is exceedingly important that the question of identity should be answered correctly. I am unable to accept the opinion of certain authorities that the great epidemics which recur quite regularly once every generation are the result of an accidental concentration of factors, which convert an annual disease into an overwhelming epidemic. The eighteenth century speculation as to what might be the intensifying agent was that it was "some inexplicable disturbance in the bowels of the earth." The most recent is that it is due to the fact that our solar system is at the time passing through some particularly insalubrious area in space. We may take our choice.

If the clinical appearances, as seen in the individual patient, did not furnish sufficient data upon which to base the differentiation, epidemiological observation would supply the deficiency:

1. The manner of spread. In July, 1918, influenza appeared in the Charlestown Navy Yard, and spread thence over the country, radiating, as though by infiltration, or along routes of travel, as by metastasis, while our seasonal epidemics of grippe break out in a multitude of widely separated localities simultaneously.

2. The pandemics of 1890 and 1918 possessed an intensity of infective power, unequalled by anything except measles, a phenomenon certainly not possessed by the grippe of the present epidemic.

MORBIDITY AND MORTALITY.

The epidemic of 1923 began in Washington early in January, and, at the beginning, was characterized by a very high morbidity, but by a mild course. Most patients were well in a few days, and some did not even have fever. Toward the end of January there was a marked subsidence in the morbidity wave, this ebb being followed in February by another wave. The number of cases in this second wave was not so great as in the first, but there was a much higher percentage of serious cases, and a very decided mortality increase. Histories now showed a large percentage of patients who had not fully recovered from an initial attack, that is, relapses. Even in those who had not been ill previously the malady seemed to be more virulent the later it occurred.

CLINICAL PICTURE.

The most frequent mode of onset was what appeared to be a cold in the head, slight sore throat, or mild tracheal irritation. This lasted one to several days. Then developed an abrupt seizure with headache, a congested sensation in the paranasal structures, burning sensation in the eyes in some cases, generalized muscular pain, marked surface hyperesthesia, chilly sensations, sometimes general, sometimes confined to the back, loss of appetite, constipation, fever 100° to 102°, a sense of dryness, tightness, pain, or oppression along the tracheobronchial tract. The pulse varied, in some cases being less than one would expect with the degree of fever present, in others being very rapid. The respiratory rate was rarely increased, and in many cases was lower than normal. I have seen a number of cases in which the rate was twelve to fourteen a minute. This is a very valuable point in the differential diagnosis from pneumonia. There is irritating cough, and often sneezing and other evidence of irritation of the nasal passages. In the early stage there is little or no exudate. Later there is a mucopurulent discharge, the cough becomes productive, and there is at the same time a decrease in the discomfort suffered.

Physical signs in the chest consist of coarse intensified breathing heard in the paravertebral spaces at the level of the inferior angles of the scapulæ, and often extending upward over the upper lobes. Where a frank bronchitis develops, large and small bronchial râles may be present over the entire chest. Often there is a localized bronchitis.

*Read before the Medical Society of the District of Columbia, Washington, D. C., March 28, 1923.

COURSE

It appears that the progress of the disease may be arrested anywhere in the respiratory tract. The primary attack may be aborted, or the infection may extend throughout the respiratory tract, culminating in diffuse or disseminated pneumonia. Extension may be continuous or intermittent, slow or fulminating; the duration is therefore exceedingly variable. It is, in my experience, very characteristic for resolution to be associated with one or more profuse sweats. This is often alarming to patients, and they are much comforted by the assurance that it marks the beginning of recovery. Convalescence is slow, and associated with physical and mental depression, which may be profound and protracted. This depression lasts a few days in the mild cases, and often ends quite abruptly. In others, in whom the disease has run a more severe or prolonged course, or who were asthenic to start with, it may last many weeks. This stage requires careful study to prevent imprudence, and may be very trying to both patient and physician. Sometimes the physical signs of congestion about the lung hilum persist for some time after the patient is apparently well.

In this epidemic I have in five cases observed a phenomenon that I have never noted before, nor have I seen it described in the literature. In frank bronchitis, in the second stage, where the dry stage has given place to the exudative and before resolution has begun, there have appeared the physical signs of a typical bronchial asthma, as seen between paroxysms, i. e., mixed moist râles everywhere heard, high pitched whistling inspiration, prolonged noisy expiration. This condition lasted two to four days, and completely disappeared. None of the patients were habitual asthmatics. All were over forty; two were over fifty. One gave a history of having had an asthmatic convalescence following a severe bronchitis eight years before, but never at any other time. Two had recovered from pulmonary tuberculosis, one three years ago, and the other within a year. Several colleagues have told me that they have met with similar cases.

Patients with chronic infection of the tonsils or accessory nasal sinuses are almost sure to have an exacerbation during or following an attack of this disease. Indeed, an attack of grippe is often the starting point at which a focal infection begins to show troublesome activity. I have now under observation a patient who has furnished an opportunity of seeing the beginning of the infectious process.

Case.—P. M., a child of five, had been a perfectly healthy specimen since birth, her only malady having been an attack of chickenpox in her fourth year. In January, 1923, she contracted the prevailing grippe, apparently in school. It took the common form of a febrile bronchitis, which lasted three days, so that she was out of school only a week. In the meanwhile her elder sister contracted acute tonsillitis, to which she had been subject. About ten days after the initial grippe the patient (P. M.) manifested abruptly fever and loss of appetite. Examination showed the tonsils moderately inflamed with a crypt exudate characteristic of follicular tonsillitis. The condition was so mild that no treatment was prescribed other than bed and a liquid diet. Next day she had two convulsions in rapid succession. Under bowel cleansing and alkaline treatment by mouth, there was no recurrence of constitutional symptoms. The urine showed a well marked reaction for diacetic acid. The upper anterior cervical glands (those draining the tonsils) were now found to be enlarged, indurated and tender. The fever soon subsided, and the involvement of the glands diminished. For the following two weeks she got along well when at rest, but whenever she exerted herself at play, and once when she got excited, there was a recurrence of fever. Then, without warning she had a sharp transient pain in her ear. Examination showed a bulging drum, which was immediately incised, and discharged turbid serum. In two days there was established a profuse discharge of pus, containing hemolytic streptococci in pure cultures. Later there was a recurrence of bronchitis; finally suppurative mastoiditis.

The point of interest in this case in connection with the present discussion is whether this child's tonsils were infected at the same time and by the same organism that caused the primary attack of grippe, or whether she contracted tonsillitis from her sister. It is to be noted that she had had repeated opportunities before to contract her sister's infection, of which she had not availed herself.

I wish to impress the point that the terms grippe, influenza, flu, and the like have absolutely no meaning in the scientific sense. Until an etiological differentiation can be established, we shall have to rely on clinical data for our guidance. The researches of Olitzky and Gates, of the Rockefeller Institute, may ultimately furnish the solution of the problem, but the proof cannot be conclusive until they are tested by a genuine pandemic, such as that of 1918, and for that we shall probably have to wait many years. These investigators cultivated from the nasal secretions of three patients of the 1918 epidemic, and from one patient in 1920 (the patients being examined in the first hours after the onset of their disease), a filterable organism, which they have termed the Bacterium pneumosintes. The following is their summary (1):

"Cultivation of Bacterium pneumosintes in the collodion sac dialysate of a tissue medium produces an antigen suitable for serological tests."

"Injection of dialysate cultures of Bacterium pneumosintes into rabbits results in the production of antibodies demonstrated by agglutination, precipitation, complement fixation and phagocyte reactions."

"Four strains of Bacterium pneumosintes, three from the first epidemic influenzal wave (1918-1919), and one from the second (1920), show identical antigenic characters."

"The blood serum of rabbits experimentally injected with glycerolated active material of rabbit passages contains specific agglutinins for Bacterium pneumosintes, whereas, normal rabbit serum does not."

The organism is an obligate anerobe, and subcultures are preserved from the original strains, but show a diminished pathogenicity for rabbits. The observers have not been able to recover Bacterium pneumosintes since, from more recent cases, but this is not conclusive, as laboratory accidents have interfered with continuous experimentation. It may be

that the next six months will furnish information on material secured by them from the present epidemic.

It is to be hoped that these researches will result in the discovery of the essential cause of such pandemic scourges as that of 1890 and 1918. But history warns us against too hasty acceptance of this organism as the specific cause. It will be remembered that in 1892 Pfeiffer discovered the bacillus of influenza that bears his name; that this bacillus was accepted as the cause of epidemic influenza for twenty years; that doubts then began to arise as to whether this organism was the real cause; and that since the 1918 epidemic there are hardly any competent observers who have not rejected it.

All the evidence that I have been able to procure points to our old enemy, the streptococcus, as the responsible factor in such epidemics as the recent one. I presented a paper before this society in 1916 (2) advancing this view, and I have, as yet, met with nothing to cause me to change that opinion. Of course the mere occurrence of streptococci in the exudates from the respiratory lesions is not sufficient evidence, but when we uniformly recover these organisms in pure culture from the complicating lesions, the empyemas, the meningitides, the septicemias, the bone abscesses, we have something to go upon.

The objection usually raised to this hypothesis is that streptococci are found everywhere, and if they are so virulent, we should all have died long ago. But it is not scientific to consider a thing impossible because we cannot explain it. There is nothing required for the acceptance of this hypothesis that does not find analogy in the accepted facts of bacteriology.

It is known that more than eighty per cent. of our population is sooner or later infected with tubercle bacilli, and yet a relatively very small percentage ever have clinical tuberculosis.

It is known that diphtheria and typhoid originate from healthy carriers.

It is known that strains of streptococci which are nonvirulent for animals may be made virulent by cultivation on such animal's blood serum, or whole blood.

It is known that streptococci increase in virulence for a susceptible animal by passage through such animal.

It is known that immunity to infection is relative, and differs with different organisms. An attack of smallpox confers an immunity that is practically absolute and permanent. The immunity conferred by infection with the tubercle bacillus, on the other hand, rapidly fades in susceptible individuals, and requires a recrudescence of the disease to be restored.

It is accepted that streptococci may rest latent in a body focus for a long time without producing symptoms either local or general; and that general symptoms may arise from such infection without local, and *vice versa*.

Taking these accepted facts into consideration, along with the immense number of streptococcus open surface carriers known to exist, it puts no strain on the reason to regard this organism as the primary infecting agent in such a disease as that described above, and that grippe is primarily an autoinfection.

On the basis of this hypothesis and of previous observation, I was able in January to prophesy what took place, viz., that there would be a recession of the January wave of mild type, this to be followed by a recrudescence which would be characterized by a more serious pathology and a higher mortality. My explanation of this is as follows:

Those patients who had the disease in January, who did not completely recover and had a more severe attack later, were victims of autoreinfection, their own strain having become more virulent through its recent pathological activity.

Those cases in which the patients were ill for the first time in the epidemic and who suffered more severely than those in the early cases were the result of contagion. It is to be remembered that autoinfection does not exclude contact infection, and that in so far as the cases were the result of contagion, those infected late would be expected to meet with more virulent organisms than would the earlier contact cases.

The clinical picture of our recent epidemic corresponds with the pathological anatomy of streptococcus infection. Streptococci possess in a very high degree the faculty of spreading along lymphatic structures. Surgeons have learned to dread this organism, on account of this virulent tendency in their cases of cellulitis, tenosynovitis, parametritis, and similar conditions. In the respiratory tract the development of the inflammation corresponds exactly to the anatomy of the lymphatics. We recall that all the efferent lymphatics of the head, oral cavity, nasopharynx and tonsils, after passing to the cervical lymph nodes, are collected into the deep jugular trunks, which empty on the right into the angle of the vena cava, and on the left into the thoracic duct. The submucous lymph plexuses of the trachea are drained by vessels which pass through the tracheal walls, and, joining with their fellows, empty into the tracheal and hilus lymph nodes. Similarly, the lymphatics of the bronchial subdivisions and lungs drain ultimately into the mediastinal lymph nodes. There is free anastomosis of the lymph plexuses underlying the mucous membranes of the nose and its sinuses, of the nasopharynx, larynx, trachea and bronchi, that is, lymphatic communication from the nose to the mediastinal glands and lungs. Clinically, when our patient gets an infectious inflammation of the upper air passages, if his immunizing reaction does not inhibit its spread, there is an extension downward of the inflammation in a fashion exactly analogous to that seen in erysipelas; and the manner of extension is the same, i. e., by infiltration of the infecting agent through the subepithelial lymph spaces.

PROGNOSIS.

The prognosis depends on the virulence of the organism for the affected individual, on the promptness with which the patient establishes immunity, and on the completeness of the immunity established.

TREATMENT.

While nothing is offered in the way of treatment that is of a specific character, I am sure that wise management, coupled with cooperation on the part of the patient, does much to shorten the attack, to lessen its severity, and to prevent complications and relapse. The most important essential is rest in bed, that is, complete confinement to bed from the *onset*. This

should be maintained, not merely till the fever reaches normal (it often falls to subnormal in the morning one to three days before the evening rise disappears), but till there has been a continuous absence of fever for forty-eight hours. Sufficient time should be given for convalescence, and this period should be watched to prevent fatigue or other indiscretion. This is the best protection against complications and relapse. At the onset the indications are for catharsis, diaphoresis and anodyne effect. In my experience these are met by the old combination of calomel, Dover's powder, and acetphenetidin, as well as by any other. The second day I invariably begin the administration of moderate doses of an alkali, generally sodium citrate, and keep it up through the febrile period in uncomplicated cases. Regulation of the bowels and control of the cough are usually the only other indications for drugs. During convalescence we may find that tonics for the heart, nervous system, or appetite are indicated. It is important that residual local infection, especially of the nasal sinuses and throat, should receive expert attention.

And in spite of all we can do, the surgeons will for the remainder of the year reap their harvest from the seed sown during the first two months.

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Glandular Fever and Influenza

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In the autumn of 1919 I observed an epidemic of six cases of glandular fever in a rural community of northwestern Pennsylvania. Two months after the subsidence of the last case this territory was visited by the influenza epidemic which swept the country for the second time since 1918. The cases were not studied as carefully as might be desirable, especially from the laboratory viewpoint; but sufficient clinical observation was made to fairly establish the diagnosis.

My reasons for reporting these cases are: 1. The disease occurs rather irregularly, occasionally goes unrecognized, and even its place in the nosology is still disputed in some quarters. 2. Pestis minor and other forms of benign lymphadenitis are frequently seen either before or after epidemics of plague. In view of this fact and of the resemblance of glandular fever, at least in the nature of its local lesion, to pestis minor, the occurrence of this small epidemic, preceding the severe outbreak of influenza, is pointed out, for whatever significance that may attach to it.

A brief survey of the rather interesting history of this disease and of its clinical picture is in place. A more complete account of the same may be found in the list of references.

HISTORY.

E. Pfeiffer (1) in 1889 was the first to call attention to the disease as a clinical entity, under the name of *drüsenfieber.* However, Protassow (2) asserted that it had been described by Filatow, of Moscow, in his clinical lectures somewhat earlier. Dawson Williams in 1897 was the first in England to recognize the condition and his paper (3) was followed by communications from several practitioners who had observed cases answering the description of the disease without having diagnosed it. In this country recognition of the condition antedated that of England. J. Park West (4) in 1896 reported to the New York Academy of Medicine the largest epidemic ever recorded, consisting of ninety-six cases observed in a rural district in eastern Ohio. The epidemic, however, was spread over a period of three years. In March, 1897, Samuel McC. Hamill (5) reported one case to the Philadelphia Pediatric Society, and presented an excellent review of the subject "in the hope that interest might be stimulated in a subject which seems to have been especially neglected in this country." Roussel read a paper on the same topic before the Philadelphia County Medical Society in the same year. Reports of small epidemics and of sporadic cases were fairly frequent thereafter. Since 1914, however, no reference to glandular fever can be found in the literature until July, 1920, when Rosenblüth, of New York, reported six cases "observed in the past two years." In 1921 Tidy and Morley (6), in England, reported two cases and gave a fine résumé of the subject. Morse, in this country, also reported two cases the same year. In both of these papers a detailed blood picture is given. It is noteworthy that this is virtually the first time that attention has been paid to this important phase of the disease. Recently Sprunt and Evans (10) reported a series of six cases of adenitis with interesting blood changes, to which they give the name of infectious mononucleosis. Under the designation acute benign lymphoblastosis Bloedorn and Haughton (10) of the United States Naval Hospital at Annapolis, report a series of four cases with an almost identical picture. Morse (9) is of the opinion that all these are undoubted cases of glandular fever, but because unrecognized were given new names under the impression that they were new diseases. Parenthetically, the memory of the profession is peculiarly poor in the matter of diseases which appear at irregular or infrequent intervals. On its reappearance the condition is often hailed as a new disease. An illustration is afforded by influenza. Each new pandemic, arriving two or three decades after the previous one, astonishes and shocks by the rapidity of its spread, its high morbidity, and considerable mortality. Several instances prove the same to be true in glandular fever. Rudolph (11) in 1914 points to articles and

letters in the *British Medical Journal* describing what the authors deemed a new disease but which was in his opinion glandular fever. Tidy (12), in 1921, discussed a communication to the *London Times* by a medical correspondent describing a mysterious infection which was also in all probability glandular fever.

SYMPTOMATOLOGY.

Definition.—Glandular fever is an acute infectious disease of unknown bacteriology, occurring in small epidemics, principally in children, and characterized by fever and swelling of the deep cervical lymph nodes.

After an incubation of about seven days the child is taken ill with fever, nausea, occasionally vomiting, and heavily coated tongue. There is tenderness and stiffness of one side of the neck, usually constipation and frequently abdominal pain. On the second or third day a swelling is seen, usually on the left side of the neck, due to inflammation of the deep cervical glands beneath and anterior to the sternomastoid muscle at about the middle of its length. The glands are tender to the touch and often attain considerable size. There is no tonsillitis or pharyngitis. There may be some infection of the pharyngeal mucous membrane, but not sufficient to account for the degree of adenitis. The swelling remains stationary for two or three days, and then begins to subside slowly. In most cases the glands on the other side of the neck begin to enlarge at about the time that the swelling on the original side has reached its maximum, and runs a similar, though usually a less severe, course. Occasionally the adenitis is unilateral; and infrequently it appears first on the right side. Suppuration practically never occurs. Many cases show enlargement of the axillary and inguinal glands. These, however, never attain the size of the cervical swellings. The mesenteric glands are often palpable. The parotid and submaxillary glands are not affected. The liver and spleen are enlarged in a considerable number of cases. Epistaxis has been seen by a few observers. Rarely, a transient rash is present. The fever and acute symptoms begin to subside after the fifth or sixth day, but the glandular swellings may not completely disappear before the end of three weeks. Convalescence in the more severe cases is slow and attended with marked debility and anemia. Complications are few; nephritis, which is occasionally hemorrhagic, being the most common one. Otitis media has been seen a few times. Prognosis is good, there being practically no mortality.

Hematology.—As stated before, it is only within the past year or two that any attention has been paid to blood examinations in glandular fever. Much light may be expected on the nature of the disease by similar work in the future. The essential change is a leucocytosis of 17,000 to 20,000 due mainly to the increase of the lymphocytes to from seventy-five to eighty-five per cent., many of the cells being of the Riedel or bilobar type. These were the findings in Morse's and Tidy and Morley's cases. The return of the blood count to normal was gradual, corresponding in time to the decrease in size of the glands, liver, and spleen.

A similar blood picture obtained in the cases of Sprunt and Evans and Bloedorn and Haughton. In both of the last mentioned reports the conclusion is drawn that the leucocytosis is the result of reaction to an infection which causes first a slight damage to the blood forming organs, followed by stimulation of the lymphoid elements. These cases were not called glandular fever by the authors, but Morse considers them undoubted instances of that disease. A perusal of the case histories certainly shows a close resemblance to glandular fever; the points of difference being the somewhat greater pharyngeal involvement, the larger number of glands affected, and the age of the patients, all of whom were young adults. In this connection it may be mentioned that Tidy and Morley (7) quote Breinil, Priestly and Fielding, who described an endemic of glandular fever which occurred in North Queensland, Australia, which was known as Mossman River fever, and of which many hundreds of cases were seen since 1877. It attacked mostly adults, and the axillary and inguinal glands were the ones affected. At the end of the first week, a leucocytosis of 12,000 to 15,000 with forty-five per cent. of lymphocytes developed. These cases are clearly not glandular fever.

The normal lymphocytosis of children is not quite as high as that seen in glandular fever.

ETIOLOGY AND PATHOLOGY.

Etiology.—Glandular fever is primarily a disease of childhood. Pfeiffer gives the age as "under fourteen." In Park West's series the ages ranged between seven months and thirteen years. A young mother of affected children is occasionally attacked, and a few epidemics among adults have been reported. Botchkofsky's (13) fifty-four cases observed among soldiers in the Russian Army is the largest of these. The sexes are equally susceptible.

Epidemicity.—Pfeiffer stated that the disease occurred in small epidemics, especially house epidemics. Park West's ninety-six cases occurred in forty-three families, about twenty children in these families escaping. Fisher records eight cases in one family and Chapman five cases in his own family (11). The evidence points to the disease being mildly contagious.

Bacteriology.—No specific organism has been discovered. Streptococci, staphylococci, pneumococci, and Bacillus influenza have been found in cultures from the mouth and pharynx and the blood.

Pathology.—No histological studies of the glands have been made. In the only case in which a necropsy was made, reported by Korsakoff (13), the glands showed hyperplasia of the parenchyma with inflammatory changes. Most of the glands and the spleen were enlarged, and the kidneys were the seat of glomerulonephritis. Streptococci were present in the pus from the cervical glands, which had suppurated before death, and were isolated from the axillary glands, the liver, spleen, kidneys, bone marrow, and heart's blood.

NOSOLOGY AND DIAGNOSIS.

Nosology.—The majority of the writers on the subject agree that glandular fever is a disease *sui generis*. This view is based on the fact that the condition possesses all the elements of an acute general infection with local manifestations, viz., its occurrence in epidemic form, its sudden onset, the definite and selflimited course; the involvement, in

addition to the glands, of the liver and spleen; and the nephritis. Nor can the source of the infection be placed in the pharynx, as might be supposed from the fact that the deep set of cervical glands that are characteristically affected in glandular fever drain the lymphatics from the tongue and pharynx. The small amount of pharyngeal catarrh even when present, and the involvement of the mesenteric glands, liver and spleen, point to a different origin.

Some observers do not recognize glandular fever as a distinct clinical entity. Holt does not mention it in the latest edition of his textbook on *Disease of Infancy and Childhood*. Griffith (14) in 1900 reported several cases which followed closely the picture of glandular fever. However, because other members of those families were suffering from influenza at about the same time, he was inclined to consider them merely a "lymphatic manifestation of grippe"; admitting that if influenza had not been active he would have unhesitatingly called them glandular fever. This view is not tenable, because glandular enlargement is rare in influenza. At any rate Griffith is hardly justified to draw from this incident the general conclusion that "it even throws doubt upon the reality of the disease." In his recent textbook (15) Griffith has not changed his views in the matter. Hand (16), while admitting that the symptom complex was well established, considered that the clinical evidence shows variations in the etiology in different cases; and that the condition often, but not always, is one of the protean manifestations of influenza. Some French writers also refuse glandular fever a place in the nosology. Gallois, quoted by Tidy, regards it as only a special form of influenza.

Differential diagnosis.—With the clinical pictures of glandular fever in mind it should not be hard to distinguish it from secondary adenitis and the tuberculous and syphilitic forms. From those cases of mumps in which the submaxillary glands alone are affected it is differentiated by the enlargement of the deep cervical glands, liver and spleen, its other features, and, probably, the blood count. In West's ninety-six cases, fifty-seven patients gave a history of having had mumps previously or had it subsequently. In Case I of my series bilateral mumps developed one month after complete recovery from the glandular fever. Parenthetically, I utilized this occurrence as proof to the parents that the previous condition had not been mumps. Like the majority of the laity they considered all swellings in the vicinity of the lower jaw mumps. As to glandular fever, they had never heard of it. During the prevalence of the glandular fever in the village there was one other severe case of mumps with complicating orchitis, in a boy of sixteen who lived about a mile distant.

The blood findings in glandular fever bear a striking resemblance to those in acute lymphatic leucemia. This, together with the glandular enlargement common to both conditions, will often make the diagnosis difficult for a short period. However, the milder course, the early remission of the active symptoms, the lack of signs of hemorrhage, and the relatively lower leucocyte count will serve to distinguish glandular fever. It is well to bear in mind in this connection the normal lymphocytosis of children.

GLANDULAR FEVER AND INFLUENZA.

The question naturally suggests itself as to whether there is any significance in this occurrence in my experience of the epidemic of glandular fever and influenza within two months of each other. A brief discussion, necessarily academic, may probably be pardoned, with a view of establishing any possible connection between the two conditions. The opinion of some authors as to the identity of the two diseases has been referred to under nosology. The comparison may be made under three headings:

1. *Epidemiological.*—Glandular fever occurs in small, usually house, epidemics; at times sporadically. Influenza comes in pandemics, epidemics and sporadically. With regard to the concurrence of the two diseases in epidemics, not many instances are found in literature. It may be pointed out that Pfeiffer's article on glandular fever was published in 1889, when the great influenza pandemic of 1889-90 began. Griffith's cases of probable glandular fever occurred during the prevalence of influenza. Rosenblüth's six cases were observed in the years 1918, 1919 and 1920. Dick, in March, 1921, reports in the *British Medical Journal* a case of glandular fever in a child and comments that "the theory that the infection may be a type of influenza may have something in it, for shortly after his illness a very widespread outbreak beginning among school children developed here." Several other communications in the same volume of the journal report cases of glandular fever. My own series occurred in 1919. It is also noteworthy that a revival of interest in glandular fever is seen during the past few years.

2. *Pathological* and *symptomatological.*—In glandular fever the deep cervical glands and occasionally other glands in the body are the seat of inflammation. In influenza there is little or no glandular involvement, but there is more or less intense inflammation of the mucous membrane of the upper respiratory tract and pharynx, with frequent bronchopneumonic complications. In glandular fever there is little or no respiratory or pharyngeal involvement. In glandular fever the liver and spleen are frequently enlarged; in influenza, infrequently. In glandular fever there is lymphocytosis; in influenza, leucopenia.

Incubation period in glandular fever is about seven days; in influenza, a few hours to a few days. In glandular fever there is constipation. In influenza, constipation or diarrhea, more frequently the latter. In glandular fever there is frequently nephritis; in influenza, occasionally congestion of the kidney. Both are acute general diseases, with fever and its accompaniments.

3. *Etiological.*—Glandular fever attacks children mainly; influenza all ages, principally during the third and fourth decades of life. A specific organism has not yet been discovered in glandular fever. Neither has the causal relation of Pfeiffer's bacillus to influenza been conclusively established. This comparison would seem to indicate that there must be but little resemblance in the nature of the two diseases. The only basis for any association between them lies in the undetermined etiology which is common to both.

Other diseases are supposed to travel in the wake of influenza epidemics. As examples are cited the prevalence during and after the late influenza epi-

demic of encephalitis lethargica and cerebrospinal meningitis. The same thing obtained in the epidemic of 1889-90. Finkler (17) refers to the reports of "a new disease called sleeping sickness," which had broken out in some parts of Italy in 1890; and to several cases of encephalitis reported in Germany by Leichtenstern in the same year. The association of these diseases with influenza is explained by Hamer (18) on the theory that one and the same infecting agency operates in all of them. Howell (19) offers in explanation the possibility that a variety of microorganisms can, under certain conditions, give rise to encephalitis, and in support of this view cites the occurrence of the latter condition in connection with poliomyelitis and influenza. It may be noted that this view is identical with the one advanced by Hand in the case of glandular fever.

GLANDULAR FEVER AND PESTIS MAJOR AND MINOR.

Pestis minor is now known to be, bacteriologically, a variety of plague, during epidemics of which it is often seen. The plague epidemic which is at present prevalent in many parts of the world, and which has appeared in New Orleans and other parts of the United States, began in 1894, supposedly in China. James Cantlie (20) who had observed five thousand cases, in a lecture before the Epidemiological Society of England in 1896, soon after the epidemic started, relates several instances of the occurrence of pestis minor during plague epidemics and discusses at length the epidemiological significance thereof. He also refers to other allied adenopathies observed by himself and others. His observations and conclusions are not without interest in connection with glandular fever. "Time and again," he says, "has it happened that before an outbreak of plague, during a period varying from a few months to several years, buboes with fever have been observed in a more or less epidemic form." The following are some of the instances mentioned: In 1877 a variety of plague infected Astrakan which was classed as pestis minor, from which none died and but few were confined to bed. The following year an outbreak of typical plague occurred 150 miles higher up on the Volga. In Calcutta, in 1890, four years before the outbreak of plague, fever with glandular swellings existed among the British troops. In the Far East, at Singapore and along the coast of China as far as Shanghai, from 1892 to 1896, singular affections of the inguinal glands were prevalent, "which occupied the attention of the Singapore and Hong Kong branches of the British Medical Society." Dr. E. D. Dickson, physician to the British Embassy at Constantinople, writing of the outbreak of plague in 1876-77, is quoted, "Two or three months previous to the manifestation of plague in Mesopotamia glandular swellings free from fever prevailed in this country. They showed themselves in the groin, armpits, and neck. . . . They began to appear about the end of autumn and continued through the winter, but towards the end of it the plague broke out and reached its acme of intensity in the spring. . . . On the cessation of the plague apyretic glandular swellings reappeared precisely similar to those which had preceded the outbreak and they continued to manifest themselves about two months longer." A form of glandular enlargement which is of particular interest, because it resembles glandular fever, is referred to by Cantlie by recalling that in 1891 he had reported twenty-three cases to the Hong Kong Medical Society of an affection consisting of the enlargement of one gland, seldom more, in the necks of children, over the sternomastoid muscle at its anterior border. The disease appeared infectious, was attended by feverishness, and there was no throat affection. Cases also occurred after the date of that report. The parotid and submaxillary glands were not involved, but the practitioners, for the want of a better name, called the condition mumps. Williams (3) comments on this report of adenitis among children as follows: "Whether the Hong Kong cases are more nearly allied to glandular fever or to pestis minor it would be useless to speculate, but the observation is interesting and may turn out to be of much epidemiological importance." That pestis minor was observed in previous epidemics of plague is shown by reference to Sydenham, who wrote of the Great Plague of London, 1864-65, "At times tumours may break out without fever or important symptoms. . . . Those to whom this happens may walk about in public as usual." Fedore observes, in 1820, "In the Levant and in the Marseilles epidemics of 1820 cases were to be seen which were not ushered in by any alarming symptoms, in which the natural functions were not disturbed, and in which buboes appeared without fever or with only slight fever. It is the benign plague of authors which is observed when the disease commences and when it is at an end, though it is rarely seen in the middle period, which is entirely devastating, *but it is not less plague.*"

This was written, remember, over sixty years before the plague bacillus was discovered by Kitasato and Yerson. Cantlie draws the following conclusions: "That long periods of time may intervene between the prevalence of specific glandular swelling (pestis minor) and the outbreak of malignant plague, and that the former may continue for years after the major form has disappeared, that independent outbreaks of glandular swellings may come and go and no plague supervene; and that the bacillus in pestis minor, at first of a low toxic power, attains malignancy by passing through the intermediate host possibly, but not probably, the rat." The rôle of neither the rat nor the flea in the transmission of plague had as yet been discovered.

Clinically, glandular fever and both forms of plague, but especially pestis minor, possess many points in common. In both diseases lymphadenitis is the local lesion; the site, however, being reversed. In glandular fever the glands affected in nearly all cases are the cervical; in plague the inguinal glands are attacked in seventy per cent. of the cases, the axillary in twenty per cent., and the cervical and maxillary in five to ten per cent. Multiple buboes are more common in plague. Suppuration of the buboes is common in plague; rare in glandular fever. The spleen and liver are involved in both conditions. Incubation period is about the same in both, three to seven days. Leucocytosis is present in both. But while glandular fever resembles pestis minor in the relative mildness of the course and very favorable prognosis, it lacks the picture of pestis major produced by the general intensity of its symptoms. There is absence of the more severe forms of cerebral

and nervous disturbance; of great prostration; of sloughing of the skin over the buboes and of the petechiæ caused by capillary hemorrhage; and of the seventy per cent. mortality. The point of distinction is, of course, bacteriological. In plague the Bacillus pestis is readily found in the glandular tissue and blood smears, and, postmortem, in the viscera; in glandular fever the causative organism has not been determined.

OTHER ADENOPATHIES.

Climatic bubo.—Among the varieties of glandular enlargement mentioned by Cantlie in his lecture on plague is one which was first described in a paper by Naval Surgeon G. C. Godding, in which he refers to many cases of chronic glandular swelling, usually inguinal, which occurred in epidemic form on board ship and among soldiers on shore, and which was a source of perplexity to the medical officers of the Army and Navy. This condition is now known as climatic bubo. Inguinal buboes develop which have no relation to venereal infection. Rost (21) thinks that the disease is contracted by sexual intercourse with prostitutes of the colored races and that it is much more common in the West Indies than elsewhere. It does not affect the male natives, and never affects children. The affected glands are only slightly tender, and no other glands in the body are involved. The fever is of an irregular, remittent type. "The incubation period is about five weeks, the course is protracted and a secondary anemia often develops. It is differentiated from plague by the mild course, as patients seldom seem sick; by the absence of very painful buboes and extreme illness"—Stitt (21). The germ has not been discovered.

Recently Sala (22), in Italy, reported that in his region the wave of influenza and epidemic encephalitis was followed by a local epidemic of nine hundred cases of jaundice. This in turn was followed in August, 1921, by an epidemic of twenty cases of inguinal buboes. These sometimes ulcerated, and at first suggested bubonic plague. All of the patients recovered after three or four months. A micrococcus was isolated from the glandular lesion.

Among infections which show glandular swelling may be mentioned trypanosomiasis, caused by a protozoan. The glands affected are those of the posterior cervical triangle.

INFLUENZA AND PLAGUE.

When the 1918 influenza epidemic, with its surprising intensity, invaded the country, many people declared it to be "the plague." Of course, this point need not be argued, because plague is readily determined by the presence of the specific bacillus. As MacCallum (23) observes, "It would have been impossible to miss the plague bacillus in cultures from the very first case." But there is some resemblance between the clinical course of the more severe cases of influenza and that of plague, especially the pneumonic form. A brief comparison of the two conditions may be included in the scope of this paper.

Epidemiology.—Both influenza and plague occur in pandemics and epidemics. The latter, however, is slower and more limited in its spread, never extending in one epidemic over the entire earth, as does influenza. Both also occur in smaller, more limited epidemics.

Etiology.—Plague is caused by the Bacillus pestis. In influenza the specific cause has not yet been definitely established. The voluminous bacteriological work since the recent influenza epidemic points to the conclusion that Pfeiffer's bacillus, while frequently the predominant organism in that disease, is not the only germ standing in causal relation; nor, in some cases, does it play even a leading part. As MacCallum (23) states, "The influenza bacillus is a common and important pathogenic invader of the lung, but strictly a secondary bacteriological invader, responsible for the pneumonia it may be, but not proved to be the cause of the primary epidemic disease." Norris and Landis (24) think that the influenza bacillus opens the door to various other organisms which are often the cause of the complications. The mode of transmission is the same in influenza as in the pneumonic form of plague, viz.: droplet infection; but, of course, totally different from that of the bubonic form.

Pathological.—Hemorrhagic processes are more or less common to both diseases. The type of pneumonia observed in the 1918 epidemic of influenza was a confluent bronchopneumonia and at times an interstitial form. A copious, bloody exudate was present in the bronchioles and lung tissue and the color of the pneumonic areas was blackish red, red, or grayish red (24). Areas of the consolidated lung were often necrotic. The bronchi, trachea, larynx and pharynx were the seat of intense inflammatory changes. The invading organisms, whether Bacillus influenza, pneumonia bacillus or streptococcus, were usually numerous, frequently loading the phagocytes lying free in the exudate and packing the alveoli and bronchi (23). In primary pneumonic plague "the pneumonic process is at first lobular, later involving the entire lobe. Microscopically, there is a destruction of the alveolar and bronchial passages with a hemorrhage exudate. There is marked congestion of the bronchial mucosa. Plague bacilli pack the exudate in the bronchi and bronchioles" (Stitt) (21). In influenza, meningitis or encephalitis was noted only in a few of the more severe cases, while in plague (bubonic form) congestion of the meninges and extravasation into the brain substance is common. But the organs characteristically involved in bubonic plague, the lymphatic glands, spleen and liver, are seldom affected in influenza.

Clinical.—Marked physical exhaustion, cyanosis, dyspnea and stupor are common features in influenzal pneumonia and in both the pneumonic and bubonic varieties of plague. Bloody sputum is present in influenza and pneumonic plague. There is leucopenia in influenza, leucocytosis in plague. Cardiac failure occurs in both influenza and plague, more frequently in the latter. In both influenzal pneumonia and primary pneumonic plague the physical signs in the lungs are disproportionately meagre compared with the pulmonary symptoms. Norris and Landis (24), in speaking of the hemorrhagic form of influenzal bronchopneumonia, remark: "The condition is not unlike that seen in the pneumonic form of plague." Stitt (21) states, "An influenza pneumonia may show the general prostration and cardiac weakness of plague."

COMMENT.

One is not justified in drawing any definite conclusions from the data given above. Pestis major and

minor are caused by the same bacillus. The latter occurs at certain periods with relation to epidemics of the former. Whether the few recorded instances of the occurrence of glandular fever before or during influenza epidemics has the same significance, cannot be said. Glandular fever and influenza do not resemble each other clinically to any marked degree, but both are of unknown etiology. Whether glandular fever occupies the same position as other infections of unknown etiology that are occasionally seen in connection with influenza epidemics, cannot in the present state of our knowledge be stated.

REPORT OF CASES.

CASE I.—C. B., male, aged four years. None of the diseases of childhood previously. First seen on October 17, 1919, on the second day of his illness. There was pain, stiffness and tenderness on the left side of the neck, heavily coated tongue, temperature 102° F. and rapid pulse. Throat was clear. On the following day the temperature was higher, and there was headache, general distress and some abdominal pain. There was a considerable glandular swelling at about the middle of the neck under the sternomastoid muscle, which was tender to touch. The pharynx was slightly congested. The patient was constipated. The illness increased in severity during the following few days and he was occasionally delirious. The swelling increased in size, attaining the maximum on the 21st of October, remained stationary for about five days, and then began slowly to subside. It was tender and hard to touch. On October 24th the glands on the right side of the neck at about the same site as on the left were enlarged, but the swelling was neither as large nor as tender as that on the left side. The temperature varied between 102° and 104°, fell slowly and reached normal on about October 27th. On October 21st considerable stomatitis developed, which lasted two or three days. On October 27th a scarlatinoid rash appeared on the chest, but was gone on the following day. No desquamation followed. A small amount of albumin was found in the urine on the same day. Urine was not examined for casts. The urine cleared up in four or five days. The swelling did not entirely recede until October 30th. There was decided weakness and anemia with the onset of convalescence, which lasted two or three weeks. On November 5th the left ear began to discharge, which continued for about three weeks. He was completely recovered by November 20, 1919. Treatment was symptomatic. On December 20, 1919, about one month after recovery, he developed typical bilateral mumps. The case of mumps referred to under diagnosis occurred on October 30th. On February 16, 1922, during the prevalence of the influenza epidemic in the territory, he developed the disease in relatively mild form. All the other members of the family, the parents and the infant brother, were also attacked with influenza, the father's case being complicated by pneumonia. The baby brother escaped the glandular fever but contracted mumps several days subsequent to the patient's case. This case was the most severe, as well as the most typical, of the series.

CASE II.—E. S., female, aged eighteen months. Was first seen on November 11, 1919. Had been sick for a day or two. There was fever, rapid pulse, fretfulness, coated tongue and constipation. Below the angle of the jaw and along the anterior border of the sternomastoid muscle two or three glands were enlarged and tender. Throat was clear. The fever continued for three days and the glandular swelling subsided on November 21st. The right side of the neck was not affected. There were no complications. The mother of this patient, aged twenty-three, gave a history of sore throat and enlargement of the glands of the neck about ten days previously. There were two other children in the same house, uncles and aunts of the patient, who escaped infection. The patient had moved before influenza reached the village, but all the members of the household who remained were affected with influenza. This patient lived about a quarter mile from the patient in Case I.

CLINICAL HISTORIES OF SIX CASES OF GLANDULAR FEVER IN FIVE FAMILIES WITH A TOTAL OF TWELVE CHILDREN. FEVER IN ALL CASES.

Case No.	Sex M	Sex F	Age Years	Stiffness of Neck	Abdominal Pain	Dysphagia	Stomatitis	Rash	Otitis Media	Anemia & Weakness	Albuminuria	Cervical Adenitis	Constipation
1	X	—	4	X	X	—	X	X	X	X	X	M	X
2	—	X	1½	—	—	—	—	—	—	—	O	♂	X
3	—	X	5	—	—	X	—	—	—	—	O	M	—
6&6	X	—	6	X	X	X	—	—	—	X	O	M	X
5	X	—	4	X	—	X	—	—	—	X	O	M	X
6	X	—	5	—	—	—	—	—	M	—	O	♀	—
Tot.	4	2	Av.	3	2	3	1	1	1	3			4
	66.6%	33.3%	4¼	50%	33.3%	50%	16.6%	16.6%	16.6%	50%	%?	♀ 16.6% ♂ 16.6% M 66.6%	66.6%

X Yes; — No; M bilateral; ♂ right unilateral; ♀ Left unilateral; O No test.

CASE III.—H. E., female, aged five years. First seen November 14, 1919, the second day of her illness. She had fever, anorexia, coated tongue, and some dysphagia. Below the angle of the jaw on the left side a swelling the size of a walnut was seen. The throat was clear. The glands on the right side of the neck became tender and enlarged on the following day, but did not attain the size of those on the left. The fever and other symptoms subsided a few days later, but the glandular swelling did not go down for several days. A sister of this patient aged seven years gave a history of fever and enlargement of the glands of the neck a week or ten days previously. No medical aid was sought. On November 14th all that was to be seen was distinct enlargement of the cervical glands on both sides of the neck. This girl in all probability had glandular fever and was the source of infection for her sister, but her case is not included in the series. There were no other children in this family. None of its members were attacked during the influenza epidemic. The house was situated directly across the street from that of the patient in Case II.

CASE IV.—S. B., male, aged six years. First seen on December 3, 1919, on the fourth day of the illness. Temperature was above 103° F., and there was dysphagia with stiffness of the neck. On both sides of the neck below the angle of the jaw and along the anterior border of the sternomastoid muscle

there were glandular swellings, two on the left side and one on the right, which were extremely tender to the touch. The swelling in this case was the largest in the series. Constipation and abdominal distress were marked. The fever subsided on the tenth day of the illness. The stiffness and tenderness lasted a week longer, and the swelling remained stationary for about three weeks. Convalescence was slow, with weakness and anemia.

COMMENT.

No assertion is made that the case histories given above represent a thorough study of the cases. The patients were seen irregularly, no laboratory examinations were made except the urinalysis in Case I. Enlargement of the liver, spleen and mesenteric glands was not looked for. Glandular involvement in other regions than the neck was not seen. The cases occurred in Rixford, a village in northwestern Pennsylvania. No other cases were seen by me in the other villages and countryside in that territory. The average duration of the disease was from two to three weeks. One patient was attacked by mumps one month, and with influenza three months, after recovery from the glandular fever. Another patient had had influenza nine months before, and three months after, the glandular fever. There was one case of mumps near the village soon after the beginning of the glandular fever epidemic and a few cases in town at about the same time as patient in Case I had it. The other features are shown in the table.

SUMMARY.

A local epidemic of six cases of glandular fever followed in two months by a widespread epidemic of influenza is reported. The literature on glandular fever is briefly reviewed and an analogy attempted of this incident and the occurrence of pestis minor in plague epidemics. Comparison is made between glandular fever, influenza, and plague.

CONCLUSIONS.

1. Glandular fever is a clinical entity.
2. Its chief features are cervical adenitis and a lymphocytosis.
3. It occasionally goes unrecognized.
4. The degree of its association with influenza is not determined but may be of some epidemiological significance.
5. Further blood studies in glandular fever is necessary as well as further investigation of its bacteriology.

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Additional case histories and a complete list of references will be included in the author's reprints.

Laboratory Findings in Encephalitis Lethargica and Their Relation to Diagnosis

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Encephalitis lethargica is an acute contagious disease, the cause of which, so far as known, being an ultrafilterable virus present in the nasopharyngeal secretions, the portal of entry being probably the nasopharyngeal passages.

While the condition has been recognized as a distinct clinical entity only within the comparatively recent past, it has, in all probability, at times been confused in the past with other conditions involving the cranial nerves with a subsequent more or less common symptomatology. Among these may be noted, in addition to encephalitis lethargica, acute poliomyelitis, botulism, syphilis, and certain forms of food and drug poisoning (1).

Because of the difference in the treatment and prognosis of these varied conditions; because of the frequent diagnostic difficulties they present, and because of the important relation of the early diagnosis of encephalitis to prophylactic measures, it seems of interest to gather together the various laboratory procedures of possible value and to establish their evaluation and status with regard to this infection.

This seems of especial interest because of the presentday tendency to utilize, at times, laboratory methods at the expense of other methods of examination and to replace minute and exhaustive clinical examinations by laboratory requisitions.

The usual laboratory avenues of approach in encephalitis are the urine, the blood, and the spinal fluid, all of which may be considered in order, it being definitely stated at the outset that pathognomonic findings are present in none and that the findings in all must be carefully interpreted and closely correlated with all the other findings of the particular case.

URINE.

There are no characteristic findings. It is not infrequently entirely normal and, when variations from normal are found, they are, as a rule, such as are indicative of a mild, infectious nephritis. (2)

BLOOD.

Blood cultures have been, without exception, sterile in all reported instances and, if the cause of the disease is an ultrafilterable virus, as seems most probable, no information can be expected from this type of blood examination except where a secondary or concurrent bacteriemia seems possible.

Cytological blood examinations have, likewise, given little information of value *per se*. Neither the hemoglobin percentage nor the red cell count show any significant variations from normal. As a rule, there is no marked evidence of either leucocytosis or leucopenia, the white cell count varying from normal to 15,000 or 20,000, the average finding being generally a slight leucocytosis—10,000 to 12,000. Studies of the stained smear show little. The differential count in the presence of an increased number

of white cells shows the increase to be mainly of polymorphonuclear origin. Serological examinations of the blood in the absence of an antigen are not feasible.

SPINAL FLUID.

It is in the spinal fluid that the most marked variations from normal would be naturally looked for and it has, accordingly, been studied by numerous observers. It is, perhaps, advantageous to record the findings noted in order.

1. *Appearance.*—As a rule, the fluid is clear and limpid though slight degrees of turbidity due to increased cell content have been occasionally noted.

2. *Pressure.*—Normal, as a rule; when increased the increase is slight (2).

3. *Cell count.*—Normal or moderately increased. Neal (2) has occasionally seen the cell count reach 150 to the c.mm. Howell (3) in a study of thirty-eight fluids, reports counts ranging from 2 to 212 with a mononuclear percentage of forty to one hundred per cent. Other observers, though occasionally noting an increase in the mononuclear percentage, found the predominating type of cell to be the polymorphonuclear.

4. *Globulin.*—Usually slightly increased, the degree possibly bearing some relation to the stage of the disease in which the puncture was made. In any event, the increase in the amount of globulin is not apt to be marked.

5. *Sugar content.*—This has been studied by several observers. The average sugar content of 203 normal fluids is reported by Moates and Keegan (4) as 0.0588 per cent. and the same observers in a study of twenty-nine cases of encephalitis report findings of 0.046 per cent. to 0.288 per cent. They believe an increase of sugar to be of some diagnostic importance. The same view is expressed by Thalhimer and Updegraff (5). Neal (6), however, finds sugar determinations of no value.

6. *Complement fixation test.*—Uniformly negative except where there is coincident syphilis.

7. *Bacteriology.*—Uniformly negative.

8. *Colloidal gold reaction.*—Varying and contradictory findings are reported, all observers, however, being united in the opinion that there is no curve significant *per se* in this disease. The majority of observers find the changes to occur toward the left of the series or in the socalled syphilitic zone and frequently of the moderately luetic type. Negative reactions are common.

Davis and Kraus (7) in a study of thirty-four cases found an abnormal colloidal gold curve in forty-one per cent., the reactions generally occurring toward the left of the series. They were unable, however, to note any relation between the character of the curve and the duration and severity of the disease or the clinical picture.

Similar findings are recorded by Howell (8) and by Lewis, King, and Dinegar (9). The last named, however, feel that the occurrence of a luetic or paretic curve in the absence of a positive Wassermann in the spinal fluid coupled with the presence of suggestive clinical symptoms is of some diagnostic significance.

The occurrence of a paretic curve in encephalitis has been disputed but instances have been reported by Howell (10) and Davis and Kraus (11).

While a typical paretic curve is not a frequent finding the last named observers in thirty-four cases found the curve to vary from 5432211 to 0000110000 and similar readings have also been reported by others so that such a curve does rarely occur.

The following summary of colloidal gold reactions seems justified:

a. There is no characteristic colloidal gold curve in encephalitis.

b. The reactions, apparently, while indicative of meningeal irritation, give no indication as to the cause or type.

c. Reactions may vary from negative to moderate changes in the left of the series or in the socalled syphilitic zone; rarely these may be marked and may simulate the socalled paretic curve.

d. The character of the reactions appears to bear no relation to either the cell count or the globulin content of the fluid.

From the foregoing it is apparent that the diagnosis of encephalitis cannot be made by means of laboratory findings with any certainty; indeed, the differential diagnosis from poliomyelitis is almost an impossibility except by virtue of the more abrupt onset of the latter condition and the fact that it is associated in its inception with a decrease in the sugar content.

Laboratory examinations in encephalitis, however, if they have little positive value are of distinct negative value in aiding in the diagnosis of the disease by exclusion, and are thus of assistance in ruling out syphilis, the pyogenic meningitides, and tuberculous meningitis. As always, the true significance of laboratory findings is best determined by their correlation with all the other findings of a particular case.

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Public Health Education

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I wish to say at the outset that the ideas here projected are the result of inspiration rather than of experience, as my experience in the teaching of public health is limited. But after many talks with those who have been longer engaged in this field I find that they too are a bit vague as to the best methods which should be employed in public health education, so I shall not apologize for daring to have certain ideas.

So far, I am happy to say, the process of public health education has not been frozen over by an impermeable crust of standardization. This to my mind is the most hopeful sign, in that opportunity for experimentation, development and serviceable extension is not throttled, or embarrassed by dogma, cant and fixed policy. There is now no question as to the place public health will hold in future medical education and practice, yet a tremendous responsibility rests upon the shoulders of those who teach the subject to make that place definitely assured and practical. At present it is generally agreed that the place to start health education is in the public schools, to be continued and amplified throughout the college and university courses. Just here let it be recorded that physical education has come to be recognized as a positive ally to the health program, and coupled with lessons in hygiene, as it must be, gives to our schools and colleges a decided opportunity to awake within the student's mind his slumbering health consciousness. The future of public health in a great measure rests upon the ability of our teachers of physical education to vitalize health and make it both attractive and desirable by tactful presentation of the principles of hygiene. But it is my purpose to discuss public health education as touching the undergraduate and graduate physician.

In the first place, we face the fact that the majority of medical students, upon graduation, enter upon their life's work as general practitioners. Incidentally, they hope to make a good living out of their profession and in this they are justified. Many of them have chosen the medical profession because they believe it to be a good business. Many have suffered all sorts of financial sacrifices in order to earn their medical degree, and usually are heavily in debt. They see the members of the faculty drive up in sumptuous cars, find them living in luxurious homes, and hear the majority of them lecture on curative medicine, and at once come to the conclusion that it is curative and not preventive medicine that pays. The chair of public health in the medical school cannot and must not be expected to carry the whole burden in teaching preventive medicine. Unless the occupant of the chair is a wizard—and few are—he cannot do the job alone of making the subject attractive and hopeful to the average group of medical students.

The thing that happens in the process of most medical education is the emphasizing of sickness, the abnormal rather than the normal. Only too often it occurs that the student is drilled in recognizing the abnormal and almost nothing taught about the recognition of the normal. I have often observed that the dullest student can recognize the abnormal but does not and cannot recognize the normal, and even the brightest student is not far ahead of him when it comes to detecting the normal. This is a most serious defect in the methods of medical teaching and it is upon the basis of this faulty teaching that the student expects to find sick persons, and is usually successful. His one ray of hope is to find sickness.

The very word preventive medicine scares the student away, for to him it seems like financial suicide and as he emerges out of school he is not ready to kill the proverbial goose that lays the golden eggs. Frankly I do not like the word preventive as applied to medicine and in all my teaching I use the term sociological medicine when referring to public health practice and measures. It is possible that my term does not cover the ground, but after all, medicine today is becoming more and more the biggest sociological factor in the world and in my short experience I have found it easier to carry the thought to my students by the use of this term. There are no rights reserved and no patent, so any one who cares for it may use it, and others, too, if for no other reason than to disagree with it. The possibilities for discussion are great.

Not until we can get every member of our medical faculties to teach the methods of human betterment as applied to medicine, injecting therein the sociological phase of the physician's duty to the public, shall we be able to get our young physicians to catch the new spirit of the new day. Almost every physician in the world, from the most erudite specialist to the money mad practitioner, in various degrees advises his patients along sociological lines as touching health problems. It so happens with the majority that they do much of this work without seeming to regard the high plane such advice occupies in their daily practice. Those who teach dwell more upon the cures made than upon the sociological phases entering therein, and it is just here that the average medical student gets a onesided picture. Thus the young physician goes out into the world with the idea that his success depends upon sickness alone. Sickness we shall always have with us, but there are always more sick persons going about their daily occupations than are to be found confined to home and bed. The records of the last war opened our eyes to this important fact. As the public health idea spreads, this former class will make up the majority of our patients. As I have often noted, it happens that the public is becoming educated more rapidly in this phase of medicine than are the physicians, and it is our duty to see to it that practitioners are not caught napping.

In most instances public health teaching has been an outgrowth of the bacteriological department of our medical schools. Unquestionably this is the proper source of such ideas and practice, but it is easy to conceive the rather fatal limitations to which this vast subject may be confined by restricting it to this department. Many of the teachers of bacteriology have always been purely laboratory men and know little of the practice of medicine and its human touch. Far too often laboratory men are inclined to reduce everything to a formula and are prone to neglect the fact that human beings are not always, in fact never, quite so reducible. I do not believe it possible for any one to teach public health who has never been in close touch with patients and their medical and sociological problems. Nor it is possible to teach the subject properly without a workable knowledge of human psychology. The matter of human behavior and human reaction under the application of certain altruistic stimuli must play a positive part in the whole process or we miss the goal toward which we are striving. The human side after all is the big thing, the grand idea, and if we miss that we miss all.

More and more it must become the duty of all medical teachers to emphasize and dramatize the tremendous conservation program which is necessary to meet the stress of present day economics, and the part modern medicine plays therein. In the new light of thinking and acting it is imperative that every physician regard himself as a private health officer, and in this capacity administering to the sociological, economic and health needs of his patients and their families. There is no way to apply the principles of health and hygiene except through the family. Family habits and customs give us our cue. Society must be taught to want health and then to realize that certain rules must be obeyed to obtain it. In other words, public health must be made fashionable. In order to attain this end every physician becomes a teacher and incidentally he will find it a paying practice.

It has been my custom in lecturing to undergraduate students to emphasize the fact that the public health course given in the medical schools does not presume to teach them to become public health officers, but rather private health officers. My attempt is always to try in some way to develop the public health consciousness in the minds of young medical men and women. One lecture is given on the subject, Does Public Health Pay?, and in this the idea is stressed that the ordinary methods of public health practice, as they can be applied so well by every physician, afford a wonderful open sesame to the hearts, minds, and pocketbooks of the public, and is the young physician's one best opportunity. Experience has shown me that a lecture of this type sows the seed of desire to know more of public health and takes away from the subject the suicidal aspect which it at first seems to present to the mind of the average student. Put in plain, terse, idiomatic language, all young medical students "have to be shown," and they are not willing to take an interest in public health so long as it seems an idealistic matter which gives no financial returns. However, greater and greater strides are being made in public health every day as the people are beginning more and more to demand it and are willing to pay for it.

The American public today does not want state medicine, nor free medicine, but better medicine and better doctors. The practice of public health methods brings about both better medicine and better doctors, for it weeds out the incompetent and careless physician and lifts the whole matter of early and careful diagnosis to a higher plane. Training in public health methods makes good doctors, better doctors, and whether they serve in either a public or a private capacity, they are always able to render a higher and better service to the community than they who are not so trained and are therefore without the big vision of the greatest of all human services. There never was a time in the history of man when the thoroughly trained physician occupied the pivotal position in society that he does today. There is hardly any field in social economics that he does not touch and in most instances serves as a most determining factor in the proper functioning thereof. There never was a time in the history of education when the M. D. degree carried with it such a dignified and tremendous responsibility as it does today, typifying the highest and most serviceable academic attainment possible. Much of this result is due to the public health movement and the sociological application of those principles which bring a greater degree of health and happiness to mankind.

It must, therefore, become the duty of all medical teachers to join hands in perpetuating and amplifying the high principles already attained. There is no place in the curriculum in which the teacher cannot feel justified in stressing the advantages and importance of sociological medicine, with the idea of focusing the student's attention upon the ultimate high calling which is demanded by modern medicine. The physician has no one to blame but himself for the mushroom outcropping of the various "pathies" which have sprung into being because their projectors were shrewd enough to see that the public wanted the human touch, which regular physicians had too long withheld. But as sociological medicine grows we see born a new practice, a practice with a heart in it, a practice with a soul in it. This is the vision present day medical teachers must catch if they are to keep their standards at the ultimate, and invulnerable against the shafts of all classes of interlopers and impostors. It seems quite certain that the majority of our teachers are conscious of their duty and the tremendous responsibility which is theirs.

Public health is science brought to life and ushered into society. Sometimes we are too often inclined to make our science too literal, too dogmatic and never let it get a perspective and feel the touch of imagination, atmosphere, and that element of humanness it needs to make it practical. Public health is science put into play, into action for the preservation of society, and the development of the highest and best social instincts among men. If medicine is to hold human respect it must study human society more and serve it in a larger way.

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Notes on a Group of Burn Cases*

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As a result of the explosion of a gas tank eleven laborers were more or less severely burnt and were admitted to St. Agnes's Hospital, October 10, 1922. The following notes are abstracted from the hospital records of these cases.

CASE I.—J. M., aged fifty, Italian; face, neck, both forearms, and both hands burnt in the second degree. His temperature was 101.4° on the second day, 102° on the seventh day, and gradually descended, reaching 98.4° on the ninth day. Pulse rate did not exceed 100. Rate of respirations varied between 18 and 24. Coagulation time of blood was six and one half minutes. Slight increase in the number of white blood cells (8,400 to the c.mm.). Two uranalyses showed albumin; six examinations were negative. Thirty fluid ounces of urine were voided during patient's second twenty-four hours in hospital. Patient was discharged on the eighteenth day.

CASE II.—L. D. S., aged twenty-four, Portuguese; face, neck, right and left arm, right hand and left leg burnt in the first and second degree. Temperature arose to 101.6°, gradually descended, and was 98.4° on and after the tenth day. Rate of pulse was 96 on admission and 80 when discharged. Respirations were 20 to 22. Eye complication, conjunctivitis. Coagulation time of blood three minutes: Leucocytosis of 16,600 to the c.mm. Urine voided during the second day measured thirty fluid ounces.

CASE III.—R. A., aged forty-six, Spaniard; face and neck burnt in the first degree; left arm burnt in the second degree. Temperature on the third and fourth days was 99°. The rate of the pulse varied between 70 and 80. Respirations were 18 to 20. When discharged the temperature was 98.4°, pulse 70, and respirations 20. Patient would not permit examination of his blood. On October 14, 1922, a twenty-four hour specimen of urine measured forty fluid ounces and contained no albumin, no casts, no acetone, and no diacetic acid. Discharged on the twelfth day.

CASE IV.—R. D., aged twenty-five, American negro; burns of first and second degree involving face, neck, posterior surface of thorax, and both forearms. Patient's temperature descended to 97.6° shortly after admission, but he reacted to external heat (electric cabinet). Patient vomited at intervals on the second and third days. October 7, 1922, patient complained of pain in abdomen, no tenderness, no rigidity. On October 18th, 19th, 20th, and 21st the patient was feverish (temperature 100° and 101°), restless and, at intervals, delirious. On October 22d, the temperature was 98.8° by axilla. Patient had improved. Coagulation time of blood was four minutes; white blood corpuscles 6,050 to the c.mm. Twenty-four hour specimen of urine measured thirty-three fluid ounces. Eye complication (conjunctivitis) was present. Ten specimens of urine contained albumin; four were free from albumin. Discharged on the thirtieth day.

CASE V.—F. D. G., aged twenty-eight, Italian; second degree burns of face, ears, arms, forearms and hands. After admission patient's temperature dropped to 96°, and he was placed in the electric chamber, where he reacted. Coagulation time of blood was five minutes; leucocytes 9,500 to the c.mm. Eye complication, conjunctivitis. Four specimens of urine contained albumin; six specimens were free from it. A twenty-four hour specimen measured thirty-five fluid ounces. Patient was discharged on the thirtieth day.

CASE VI.—J. M. A., aged twenty-eight, Portuguese; face, neck, posterior aspect of chest, and both upper extremities burnt in the second degree. On admission temperature was 99° and then became subnormal. Patient reacted in the electric chamber. Maximum height of temperature was 102.6° (on fourth and ninth days). Pulse was 112 on tenth day. Eye complication, conjunctivitis. Coagulation time of blood, seven minutes. Leucocytes, 7,800 to the c.mm. Twenty-four hours urine output measured forty-eight fluid ounces. Eight specimens of urine contained albumin and five were free from albumin. Patient was discharged on thirty-fifth day.

CASE VII.—G. T., aged twenty-six, American negro; burns of first and second degree involving face, neck and both arms; severely infected. Temperature arose to 104.6° on the fourth day, but descended to normal on the ninth day. Eye complication, conjunctivitis. Coagulation time of blood, five and a half minutes. Leucocytosis, 7,000 to the c.mm. Twenty-four hours output of urine measured twenty-four fluid ounces. Several examinations of urine revealed albumin. Patient was discharged on the eighteenth day.

CASE VIII.—P. S., aged thirty-two, Irish; first and second degree burns of face, neck and arms; temperature ascended to 102° on the second day and returned to normal on the seventh day. Eye complication, ulcer of cornea. Coagulation time of blood, four minutes. Leucocytosis, 11,100 to the c.mm. Twenty-four hour output of urine was seventy fluid ounces; several specimens contained albumin and casts. Patient was discharged on the eighteenth day.

CASE IX.—A. F., aged thirty-six, Italian; face and left forearm burnt in the first degree. Coagulation time of blood, five minutes. Leucocytosis, 9,900 to the c.mm. Patient voided seventy fluid ounces in twenty-four hours. Discharged on the fourth day.

CASE X.—E. G., aged twenty, American negro; left arm burnt in the second degree. Coagulation time of blood, three minutes. Leucocytes, 9,000 to the c.mm. Twenty-four hour output of urine measured forty-eight fluid ounces. Patient was discharged on the third day.

CASE XI.—F. C., aged twenty-two, Italian; first degree burn of face; first and second degree burn of

*Meeting of Clinical Staff, St. Agnes' Hospital, Friday evening, February 23, 1923.

right hand. Coagulation time of blood, four minutes. Leucocytes 13,100 to the c.mm. Patient voided forty-eight fluid ounces in twenty-four hours.

TREATMENT.

On admission to the hospital each patient received an injection of a quarter of a grain morphine and an inoculation of 1,500 units of tetanus antitoxin. For the first seventy-two hours sterile gauze dressings, saturated with a ten per cent. hot solution of sodium bicarbonate, were applied to the burnt areas. As soon as it could be obtained, a specimen of urine from each patient was sent to the laboratory to be examined for albumin, casts, diacetic acid and acetone. After the initial specimen had been secured, the daily twenty-four hours output was measured and sent to the laboratory for examination. This report mentions only the result of the examination of the first twenty-four hours specimen of urine from each patient. The first twenty-four hour specimen has been secured in most of the cases within forty-eight hours; in a few, within seventy-two. We feel that it is important quickly to examine a specimen of the first urine procurable, as we do not wish to be delayed twenty-four, thirty-six or forty-eight hours if we are dealing with acidosis.

Internally, to these patients were administered coffee, potassium citrate, calomel, magnesium citrate, and abundance of water and concentrated liquid nourishment. For one man in whom we suspected (fortunately, without foundation) acidosis we ordered bicarbonate of soda by mouth and by bowel—without waiting for the result of the uranalysis. Three of these patients were placed in electric cabinets because of subnormal temperature. These three patients also received atropine hypodermically and whiskey by mouth. After seventy-two hours had elapsed the sodium bicarbonate solution was discontinued locally and the burnt regions were kept moist by means of a two per cent. solution of Dakin's oil. We realize that a two per cent. solution of this preparation may be irritating to some patients, but this group of patients did not seem to suffer any pain from it. The eye complications were treated successfully by Dr. George F. J. Kelly. When these patients were discharged from the hospital their burns had either completely healed or had been covered by healthy granulations.

We are not interested in advocating any one particular method of treating all burns, but we believe with Lee (1) that sealing burns with wax is comparable to closing traumatic wounds and we accept Moorhead's (2) definition of burns, namely, "infected wounds due to heat."

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Anemia Subsequent to Antisyphilitic Treatment

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The association of anemia with syphilis has long been recognized. Only recently, however, has any attention been given to the anemia which follows the clinical cure of syphilis, or an attempt made to ascertain whether the impoverished condition of the blood was due to the natural effects of the spirochetic infection, or could in any way be related to the drugs administered to combat this infection. It has always been customary to regard the anemias of syphilis as of relatively small importance, and in like manner, when the condition appeared subsequent to a course of antisyphilitic treatment, it received only cursory attention.

That postsyphilitic anemia may, however, become a grave, and occasionally even fatal condition, has been brought home to us by several recently reported cases of aplastic anemia following the administration of drugs of the arsphenamine group. Two years ago Hans Görke, of the University of Breslau, gave an account of three cases of aplastic anemia following salvarsan administration, two of which were fatal. A fatal case of stomatitis and aplastic anemia due to neoarsphenamine was published last year by Moore and Keidel, of Baltimore, and a few months ago Feinberg, of Chicago, reported another with a similar history. Feinberg remarks that he was moved to publish his case because of the rarity of such accounts in the literature, and also "because it points out one of the possible complications of neoarsphenamine, which has thus far been chiefly overlooked."

Though simple anemia is not a rarity either during or following a syphilitic infection it is none the less true that it, also, has been chiefly overlooked. This point was effectively brought out in a symposium on visceral syphilis which was featured at the annual convention of the British Medical Association in 1921, where John Eason discussed the anemias of syphilis. As the anemogenic processes of syphilis are very imperfectly understood he felt that writers generally had succeeded only too well "in instilling the idea of mildness as being almost characteristic of this anemia" while as a matter not only of his own observation, but of record in the literature, "the anemia occurring in secondary syphilis may be grave, or even fatal."

The frequency with which the spleen is involved in a general syphilitic infection—most often without manifesting any symptoms whatever—has been emphasized by Wile, although at the same time he pointed out that anemia occurring early in the course of the infection might be generally constitutional, rather than splenic in origin. Many of Eason's cases of secondary syphilis showed a severe degree of oligocythemia, as well as poikilocytosis, anisocytosis polychromasia and punctate basophilia. There were normoblasts and megaloblasts, and in one case, eosinophil and neutrophil myelocytes were found in con-

siderable numbers. In all the cases the color index was definitely above one, with a red cell count of 1,000,000 and about twenty per cent. hemoglobin, with grave anemia.

It is unfortunate that more extensive records of different blood pictures in syphilis are not available, for their comparison with those obtained after a course of treatment with one of the arsenical preparations might bring to light some interesting considerations.

I have had no opportunity of seeing any such severe cases of postsyphilitic anemia as those described by Moore and Feinberg; but in the routine of practice so many patients come under observation who are suffering from profound blood derangement following the use of arsphenamine or neosalvarsan for the treatment of syphilis that the frequency of the condition has been very forcibly demonstrated. Assuming the prevalence of anemia due to the spirochetic infection, the question naturally arises, as to how far we may attribute the condition which we find after a course of drugs of the arsphenamine group to the original infection, or whether any particular case may not be wholly due to the toxic effects of the drug.

The truth is that little is known of the actual pharmacology of arsenic, outside of clinical demonstration, and in the minds of many physicians there is considerable confusion as to whether the value of salvarsan lies in its actual spirocheticidal ability or in the assistance in building up the resisting power of the blood, thus enabling the body to effectually overcome and neutralize the invading organisms. This confusion dates back to the period when salvarsan was first commercialized, and is largely due to the misleading propaganda put forward at that time by certain producers. Because of this confusion many practitioners fail to distinguish between a tonic dose of an arsenical derivative, and the spirocheticidal dose.

As Kiefer has recently expressed it: "We must always bear in mind the fact, as originally pointed out by Ehrlich himself, that the action of salvarsan on the spirochetes is not that of a direct spirocheticide, but that a third factor existing in the body fluids is necessary, which appears to be a fixing agent comparable in a general way to the action of complement (which is nonspecific) but which acts to complete the antigen amboceptor combination."

Elsewhere, this same writer remarks that because of "the apparently wonderful results" following the use of salvarsan, we are too often tempted "to treat syphilis, rather than patients with syphilis, and to formulate definite courses of treatment" without observing that "while the disease is being influenced quite as favorably as we would have it, the patient is retrogression physically."

The soundness of these observations has been repeatedly demonstrated in my personal experience, and the necessity of considering each person who comes for treatment, not as a case, but as an individual patient, subject to the infinite variations from type likely to be in evidence in every member of the human race, has become increasingly manifest. In many cases, the sequel of vigorous treatment with neoarsphenamine and mercury has been a profound anemia, and recovery cannot be hoped for unless the hemoglobin index, and red cell count, can be increased. The depleted state of the blood indicates how greatly the patient's general powers of resistance have been lowered, and demonstrates the occurrence of some change in the blood and body fluid which has affected colloid exchange.

Once we are assured that the anemic condition is the result of the mercury and arsenic being thrown into the circulation, the only rational procedure would appear to be, to substitute some other form of medication, at least until such time as an increased red cell count indicates that the anemia is under control. But if the Wassermann reaction is still positive, very few of us have the courage of our convictions sufficiently to permit us to withdraw these two standard antisyphilitic agents, or even—as Kiefer suggests—combine them with iodides, as more applicable to this particular patient's blood findings.

In a previous paper I reported a number of cases where I had been successful in correcting anemia by means of iron and arsenic intravenously administered. Since the appearance of that article I have applied this form of treatment much more extensively, and can confirm and reiterate all the observations which I made upon it three years ago. Not only am I even more firmly convinced of the value of this form of therapy in many blood conditions, but I regard it as peculiarly applicable to the particular type of anemia here considered, the anemia following antisyphilitic treatment by neoarsphenamine and mercury.

There is today no need of giving any details for the technic of administration—the use of the intravenous route is now too frequent to make that necessary—but there is one point which it is still desirable to emphasize—and that is the purity of the solutions used, and the accuracy of the dose. In the intravenous treatment of anemia we are adding certain elements directly to the blood stream, and thus passing them by the shortest possible route into the blood forming organs. There is no room for guesswork, nor haphazard measures, so it becomes essential that we employ only standardized biologically tested solutions prepared with the most minute accuracy. To the practitioner who exercises care and thoroughness in this regard, success is practically certain. This particular solution of iron and arsenic, sixty-four mgs. (one grain) of iron cacodylate in five c. c., is contained in a glass ampoule. The iron is in a colloidal state.

Before reporting a few cases illustrative of the points I have endeavored to bring out, it may be well to outline my usual procedure in the routine treatment of syphilis. I regularly employ neoarsphenamine giving a series of six injections at weekly intervals; following the course of neoarsphenamine injections mercury oxycyanide is given twice a week—intravenously, eight mgs. (one eighth grain) in a five c. c. solution. The mercury oxycyanide is continued for at least a month, after which the patient is given a month's rest, with no medication of any sort. A second series of neoarsphenamine injections occupies the next six weeks, again followed by a month of intravenous oxycyanide treatment and a month's rest, and this program is repeated until the Wassermann reaction regularly remains negative.

During the course of such treatment, and after the Wassermann reaction has been negative for some time, I have frequently found a low hemoglobin index, often associated with symptoms which might readily be regarded as reflexes from the central nervous system. To combat these conditions I have used intravenous injections of a solution of iron cacodylate—sixty-four milligrams (one grain)—administered at four or five day intervals. I have found that the cacodylates are ideal compounds to employ when one wishes to obtain the tonic effect of arsenic, and it is surprising how soon the socalled nervous symptoms disappear, when the blood content shows improvement.

Case I.—This patient, an automobile salesman, had had a primary chancre in the urethra, the scar of which could be seen with the urethroscope at the time he presented himself with a secondary eruption. The Wassermann reaction was positive—four plus. Treatment with neoarsphenamine followed by mercury oxycyanide, according to the plan above outlined, was instituted. Anemia was very evident, the red cell count being 3,680,000 and the hemoglobin index 68. To improve the blood condition twelve intravenous doses of iron and arsenic—one grain in to five c. c. solution—were given at five day intervals, following which the red cell count mounted to 4,800,000 and the hemoglobin increased to 95, while the patient had gained eight pounds in weight.

Case II.—An actor, who had served in the navy for a year during the war. Initial lesion had occurred while he was in service, and he came for treatment of active secondary manifestations the original scar being evident and the Wassermann reaction four plus. He was put on the routine treatment of neoarsphenamine and mercury oxycyanide, but anemia and neurasthenia were so profound that he was unable to do any professional work. The red cell count was 3,600,000 and the hemoglobin 75. After fourteen intravenous injections of iron and arsenic given at five day intervals, the neurasthenia disappeared, there was a decided gain in weight, and the patient was able to go back to his work. The final blood count was: red cell, 5,200,000; hemoglobin, 100.

Case III.—Pugilist, aged twenty, returns from service in the trenches with a history of an initial lesion of the left tonsil—condyloma, the Wassermann reaction being three plus. After two successive courses of neosalvarsan and mercury oxycyanide intravenously, he lost weight, and was unable to keep in training. The hemoglobin had dropped to 80, and the red cells were only 4,000,000. After sixteen intravenous injections of iron and arsenic he regained his normal weight and was able to take up training again. He has since successfully engaged in a number of ring contests.

Case IV.—A nurse who had returned from the front gave no history of luetic infection, and no evidence of an initial lesion except induration of the posttonsillar tissue. The Wassermann reaction, however, was four plus, and a persistent cough was present. The usual routine of neoarsphenamine and mercury oxycyanide was instituted, but the patient was very much run down and anemic, the red cell count being 3,400,000 and the hemoglobin 75. Complete recovery followed the administration of twelve injections of iron and arsenic, the patient gaining twelve pounds in weight and becoming able to take up teaching, continuing in excellent condition.

Additional case histories and a bibliography will appear in the author's reprints.

Functional Manifestations Associated with Organic Neurological Diseases in Exservice Men*

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Manifestations of functional disability comprise by far, the largest group among the neuropsychiatric cases in exservice men. Organic disease, with its usual freedom from functional symptoms of any consequence is the rule, though in a certain proportion of instances functional and organic disturbances coexist. The general principles laid down in this paper are meant to cover all organic diseases, though the case illustration which is to be presented has to do primarily with the combination of functional symptoms with organic central nervous system disease.

In many cases the functional element is more extensive in distribution than the underlying organic part, and, as it were, submerges it. Unless great care is exercised in the examination, the organic factor may be either overlooked and the whole case wrongly regarded as functional or else the organic paralysis defect may appear more serious than it really is.

It has been frequently observed that persons with gross bodily injury or disease very seldom present symptoms of a functional nature. It seems plausible therefore to admit that serious bodily injury protects the patient to a certain extent against a traumatic neurosis. Such patients know positively that their disability entitles them to an indemnity and they do not have to worry about money damages, or else the presence of the individual's own serious disability occupies so completely the field of consciousness that there is no room for subjective phenomena to be added by suggestion. Such a state of affairs, however, does not exist ordinarily at least, in cases of an organic character with comparatively slight intrinsic disability.

The apparent individual organic reaction must of

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course not be underestimated, but in addition to this there is the ever present individual mental attitude toward the disease process which plays a prominent rôle in the symptoms, outlook and treatment of such cases, but chiefly those which are destined to be chronic. Dr. Louis Casamajor, in an address before the New York Physicians' Association, in February, 1920, summed up the situation as follows: "Disease, and more especially chronic disease, is an added experience element in the life of the patient, and one that must be considered in his adjustment to his life, both present and future."

So we may find that an actual structural disease of the central nervous system, for instance, may and often does serve as a convenient and indeed natural foundation upon which to build a vast number of functional symptoms. This array of functional complaints, though not at all a part of the organic defect, may and often does become more of a real burden to the patient than those symptoms resulting from the original organic disease. Only too frequently these functional signs are disregarded as of no real importance and our patient continues to suffer mentally more than physically. Failure to recognize their existence, therefore, gives us only half the picture. Furthermore, the functional symptoms are the very ones that offer the greatest hope of alleviation. Misdirected treatment, however, such as daily massage for an hysterical paralysis of an extremity, for instance, would do more harm than good. Disabilities of a functional nature may therefore become so firmly fixed that recovery may be absolutely prevented or at least delayed.

Such patients are often influenced by their friends as well as by other patients and indeed by physicians themselves that their disabilities are permanent and that they never will be entirely well again, so that the problem increases in intricacy. The resultant difficulty is then, the problem of making an adjustment to the circumstances in which the man finds himself. The obstacles to be overcome are at least partially linked up with the circumstances themselves, but are to a much greater extent dependent upon the personality reactions of the patient himself. It is obvious, therefore, that our study of such individuals must continue along the lines of personality investigation.

The personality, as we know, is dependent partly upon inheritance and partly upon life's experiences and education as well as alterations in the physical field due to accident or disease, to which the patient has been exposed during life. It follows, then, that no neurosis, which is in reality a personality deviation, can be attributed to any single thing.

Given, then, an individual with a certain type of personality, in whom has been demonstrated a chronic central nervous system disease, with relatively slight disability resulting directly therefrom, we may discover a number of superadded neurotic or personality symptoms which often screen the symptoms of the original organic condition.

These neurotic symptoms are, in essence, a way out of an intolerable conflict. It becomes necessary for the patient to express himself anew. He is disabled organically, but in order to satisfy his own understanding of his condition, and also to permit others to understand, he must project additional symptoms to compensate for his feeling of personal inadequacy. In this way he attempts consciously or unconsciously to create a happy medium in his mental sphere, to find his level, so to speak.

The element of sympathy for one's plight also plays a not unimportant rôle. Compassion for one's own infirmities is innate in all and must be thoroughly understood by the physician in his comprehensive study of the nervously disabled. The actual source from which these superadded symptoms are derived is suggestibility.

The question of there being a underlying neuropathic basis in some of the cases of this type, the organic neurological conditions serving as the stimulus to bring forth an hysterical reaction, destined to come to the surface at some later time, without the acquisition of an organic disease, must be borne in mind.

Another and perhaps the most important element among the etiological factors in the production of neuroses in exservice men is the problem of compensation. This phase of the subject is of extreme national economic importance, for the number of compensated patients among the war disabled is rapidly increasing. The method of compensation, by which the patient receives a monthly allowance during the period of disability, would in some cases certainly seem to act as a stimulus to the prolongation of a disability in one with previous nervous instability. In others the fear of becoming helpless if work is resumed and compensation stops, together with the certainty of State aid if their disabilities continue, there is created a condition intolerable to the patient. Confirmed invalidism is consequently often the result.

It is my intention to attempt an analysis of the functional symptoms in an exservice man with organic disease of the central nervous system and to suggest possible inroads to their origin and nature.

The case selected, as an illustration, is a young man, aged thirty-two, single, formerly an accountant by occupation, a Catholic and born of American parents. His family history was negative. The essentials of his personal history are: apparently normal development, mental and physical, and no serious illnesses or accidents prior to his present trouble. He was graduated from Union College with an A. B. degree at twenty-two, having paid nearly all of his expenses by working at odd hours and during the summer months as a reporter for several newspapers. Immediately following his graduation he took a short course in accountancy and worked in this capacity for one firm for over three years, until his induction in the army on September 21, 1917. He was very fond of his work and apparently was successful. His salary was $260 a month. In makeup patient has always been frank and open and his adaptability prior to the beginning of his present trouble was excellent. His habits have always been moderate in all fields. Heterosexual relationship began at sixteen and had been very infrequent since. Venereal diseases were denied.

He was admitted to this hospital in December, 1922, complaining of an inability to read, loss of vision to the right of the midline, difficulty in walking, due to weakness of the right leg, weakness and awkwardness of the right hand and arm and numbness of the entire right half of the body, with actual

diminution in sensibility on that side, including face, neck, thorax, abdomen, arm and leg. He complained also of some loss of weight, without cardiorespiratory or gastrointestinal symptoms and displayed a real anxiety over his condition, manifested by a vague fear that he might be a mental case and also that he might never recover his former state of mental and physical wellbeing.

The onset of the organic neurological condition dated back to three weeks following an attack of cerebrospinal meningitis in October, 1917, while the patient was in an army camp. (His military history is essentially the history of the beginning of his present trouble. He was inducted on September 21, 1917, and was discharged on October 23, 1917. The records show that he was taken suddenly ill with high fever, headache, nausea and vomiting, pain and stiffness in the neck muscles and finally delirium with several days of complete unconsciousness.) During convalescence the patient asked for a newspaper and suddenly found that he was unable to read and coincident with this discovery he became conscious that he was blind to all objects in the right half of his field of vision, and also he noticed that he began using his left hand almost altogether in reaching for things and in eating, in spite of the fact that he was right handed. A day or two later, on attempting to walk, he found that his right leg was considerably weaker than the left and that it dragged somewhat during locomotion. All of these symptoms were well established before he was given a surgeon's certificate of disability from the Army and returned to his home on October 23, 1917.

At this time he began to have intense headaches, which persisted off and on for about a year and then disappeared entirely. Remaining at home for one month he went to Lake Placid for a rest, staying there until November of the next year, 1918. It is of importance to mention at this point that the patient had been engaged to be married but owing to his inability to earn a living and also to the fact that he had accumulated only a limited amount of money, he was forced to break his engagement. It is also of significance that he was as yet receiving no compensation from the Government. While at Lake Placid, in January, 1918, shortly following the breaking off of his engagement, and about three months after the onset of the alexia, hemianopsia and hemiparesis of the right arm and leg, he accidentally discovered that sensation had become markedly impaired over the entire right half of his body. This was brought to his attention one day, while walking through a doorway, when he bumped against the wall with the right shoulder and arm and was seized with the sensation of numbness over the entire right side. Ever since then, he maintained that sensation had been definitely less acute over the right half of the body. By July of that year, 1918, his Government compensation had been adjusted to a temporary total rating which was made retroactive covering his period of disability. Leaving Lake Placid he accepted a position as timekeeper for a corporation in Erie, Pa., earning $125 a month. Continuing in this for thirteen months, until December, 1919, he became enrolled in a course in accountancy at New York University, under the Federal Board. With his previous experience, together with his earnest desire to advance in his work and to overcome his deficiency, he remained until April, 1920, when he felt that he had to give up. He stated that "his resistance had collapsed and that his visual defect would never permit of his continuing." Abandoning the course he returned to Lake Placid, in April, 1920, where he regained a considerable amount of courage and built up his general physical health which had become undermined. In September he again attempted a course in accountancy at the New York University, but this time he remained only three months. Having been ordered before a medical board he was adjudged not feasible for training and was sent to the United States Veterans' Hospital in Perryville, Md. Remaining there for six months he returned home and was admitted to this hospital last December. In February, 1922, the patient's compensation was cut from $80 a month to $8 and this is the amount he is receiving at the present time.

Physical examination reveals good development and no malnutrition. Aside from a few missing teeth, x ray evidences of a mild, chronic bronchitis and clinical signs of a slightly overactive heart, the general physical status was negative. The neurological findings were as follows: equal, regular and moderately dilated pupils, which react rather sluggishly to light and normally to accommodation; no nystagmus and no extraocular palsies. Slight diminution of the corneal reflex on the right; complete right homonymous hemianopsia, with general narrowing of the visual fields, but without changes in the optic discs; right sided facial paresis, cortical in type (definite flattening of the right side on showing the teeth, but with fair preservation of emotional expression); tongue protruded to the left; without atrophy; weakness of the right arm and leg, without ataxia; right grip—30.5 kilos., left grip—53 kilos. Biceps and triceps reflexes greater on right; knee jerk and ankle jerk greater on right; abdominals present and active, less active on right; plantar stimulation, no response on right and marked plantar flexion on left; Babinski, negative bilaterally, unless the absence of any sort of response on the right was of significance in this regard; Oppenheim and Gordon negative; stereognostic sense normal on both sides; no speech disturbances. There was hypesthesia over the entire right half of the body, including the face, cornea, tongue, mucous membrane of the buccal cavity, the neck, trunk, arm and leg. This blunting of sensation included light touch, pin prick and thermal stimuli. It produced no inconvenience or loss of function. Joint sense, vibratory sense and point discrimination were unimpaired. Patient was perfectly able to recognize the posture of the affected extremities and their distal parts, the fingers and toes, when moved in space, while the eyes were closed. The sensory diminution stopped sharply at the midline of the body.

The patient had no difficulty in understanding spoken words and sentences and he could execute simple commands and complicated movements. He recognized and named objects correctly and could repeat words, phrases and sentences unusually well. He apparently encountered no difficulty in finding proper words to express his thoughts, and stream of conversation was always well connected and to the point. Reading showed a marked defect. He was

unable to read a sentence or complicated words. While attempting to read words he always picked out each letter separately and then combined them and in such a way he was able to identify a few short commonly used words, such as "the," "is" and "fine," but he failed completely to recognize the more complex words. All the letters of the alphabet were singled out correctly but quite slowly. The patient had difficulty in naming several of the figures, mistaking "8" for "3" and vice versa and "7" for "9" and as a consequence made frequent mistakes in addition, subtraction, multiplication and division. Tests in mental arithmetic were, however, promptly performed. He was able to copy sentences, letter by letter, in a laborious manner, but was entirely unable to read what he had written. Spontaneous writing and writing from dictation were prompt and quite well done. Such signs as Y. M. C. A., R. S. V. P., C. O. D., and U. S. A. were correctly identified. The writing itself was entirely lacking in character and had no uniformity. There were no apraxia.

Mentally, the patient was intelligent and presented no evidences of a psychosis. His memory was acute for both remote and recent events. Spontaneity of action and intellectuality were adequate and satisfactory and his adaptability was unimpaired. His general mental attitude and behavior were quite normal. He stated that he was not depressed at the present time, but was quite sanguine over the future, yet at the same time he stated that he was far below par generally and hardly knows what move he would make in the event he was discharged from the hospital without adequate compensation.

The blood Wassermann on several occasions, both before and after the administration of a provocative salvarsan, was negative. Spinal fluid revealed no abnormalities. Basal metabolic rate was minus eight per cent. (within normal limits). Complete blood chemistry, including blood sugar, urea nitrogen, nonprotein nitrogen and carbon dioxide tension disclosed no deviations from normal. There was slight secondary anemia at the time of admission in December, but this has disappeared. Gastrointestinal examination was negative. Renal function test and urinalyses were negative. Ophthalmological report was: vision 20/40 right and 20/40 left. Central vision good. Right homonymous hemianopsia, with marked contraction of remaining halves of the fields for form and colors. Stereoscopic examination of the skull was negative.

In the interpretation of this case we have, on the organic side, an individual with no signs of lues or cardiac disease, developing a complete right homonymous hemianopsia, with alexia, together with a right sided organic hemiparesis, subsequent to an attack of meningitis. Following the differentiation of Dejerine, referred to by Dr. Casamajor, in his report of a similar case, the form of alexia with which we are dealing is called "pure alexia" or "pure word blindness," with the preservation of writing, both spontaneous and on dictation. In such cases it is believed that the lesion is situated under the cortex of the angular gyrus, destroying the association fibres between the optic centre and the angular gyrus, which prevents the understanding of written words. The lesion, however, does not destroy the centre itself or the path from it to the writing centre. Such a lesion is nearly always accompanied by right sided hemianopsia. The nature of the lesion in this instance is probably that of a degenerative change in the nervous tissue in the above mentioned location, consequent upon the meningitis infection. The hemiparesis, which is also organic, must be accounted for by the existence of a separate and distinct cortical lesion of probably the same pathological nature.

On the functional side we were dealing first of all with a well educated young man, whose early development was normal and whose adaptability to society in general was excellent. No particular inherent idiosyncrasy in the type of gross emotional reaction, sexual or otherwise, could be elicited. Briefly then, the longitudinal section revealed a young man, formerly efficient and contented, but suddenly made inefficient, according to the standards set down for him and confronted with the problem of an entirely new adjustment. We have traced the development of rather sudden, spontaneous numbness confined to the right side of the body, namely, the organically affected side. It is suggested that the need for this superadded symptom may have arisen from the patient's conscious or unconscious desire to express the idea that his organic condition had produced within him, in clearer terms to himself and to others.

At the time this symptom was noted the patient was convinced that he labored under a tremendous handicap. His feeling was one of intense personal inadequacy. We will recall that he was at Lake Placid at the time, making a business of looking after his health, which in itself at least favored an introversion of interests. He was undernourished, he had almost constant headache, his vision was seriously impaired, he was unable to read and he felt that all his education had been acquired in vain. Furthermore, he had the fear that he might become entirely blind and therefore completely disabled and he even harbored the idea that he might become a mental case. On the more personal side, there is no question but that the breaking off of his engagement contributed its part in the formation of the source of the neurosis. Suggestion for the making of the superadded functional symptoms undoubtedly came also from the fact that he was receiving no Government compensation and from the realization that his finances were nearly spent. Following this patient's subsequent behavior we find him working as a timekeeper, simply because he wanted to occupy his mind at something, although he was then receiving a temporary total indemnity from the Government. This occupation was a compromise at best. It was not satisfactory, for there was very little in such work to stimulate real interest. Buoyed up by a false conception of his abilities to continue vocational training in accountancy, he failed utterly and this disappointment gave rise to more anxiety in an already hypersuggestible state of mind. His having been found not feasible for training, followed by six months' hospitalization, together with a reduction of his compensation from temporary total to ten per cent., capped the climax and his neurosis became more or less fixed. It is reasonable to assume then that the residua of the attack of meningitis was the activating agent in breaking down this patient's resistance and in causing the outcrop of the hysterical reaction.

Eczema of the Breast

By DOUGLASS W. MONTGOMERY, M.D.,
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In a most entertaining and instructive paper on eczema of the breast, R. Sabouraud draws attention to a classification employed by the older French clinicians, who used to say that this affection occurred in this situation in three classes of patients, in those who had scabies, in those who were pregnant, and in the lymphatic (1).

The term lymphatic was applied to young people seemingly well nourished and apparently in good or even flourishing health. They had, however, a delicate, fine white skin, subject to infection, and cutaneously they were never out of trouble. The term as here employed must not be confused with the more recently developed designation, the status lymphaticus.

This grouping together of the scabetic, the pregnant, and the lymphatic has no pretensions whatever of being scientific, but its practical advantages are, as pointed out by Sabouraud, decidedly great. For instance, a young girl presents herself with this distressing difficulty, and the first question that arises is: Has she scabies? This question may be easy of solution. On the other hand, it may not be at all easy, as in modern city life the disease may be modified in many ways by inadequate treatment or by the use of antiseptic toilet articles. In fact, we ourselves, although constantly seeing diseases of the skin and always on our guard, consider scabies one of our most tricky diseases to diagnose. If scabies is satisfactorily eliminated, pregnancy may be considered, but of course, with the utmost tact, as by inquiry in regard to menstruation and observation of deepening of pigmentation of the nipples. Then there are the very rare cases of eczema of the breasts in young girls with the lymphatic disposition. The immediate cause of the eczema in all three classes is the streptococcus. Scabies, pregnancy, and the lymphatic constitution are predisposing causes.

Fig. 1.—Scabies of one breast in an unmarried girl, showing an unusual anatomical deformity.

There are still other cases of streptococcic infective eczema that occur in mature women with a strong vigorous constitution, and who are neither scabetic nor pregnant, but these are rare, and we later shall cite two examples of it in this paper.

SCABIES OF BREAST

Case I.—An unmarried woman, twenty-two years of age, called complaining of distressing itching all over the body, most severe at night. To the direct question if the nipples were affected she replied that the left one was. The nipple and areola were covered with thick impetiginous crusts, and there were scattered lesions over the surface of the breast with deep scratch marks. Curious to relate, the other breast was unaffected. The affected breast was very pendulous, while the other one was virginal and shapely. Whether the greater susceptibility of the left breast was in any way connected with this deformity could not be determined.

The affection had begun six weeks previously on a trip to Los Angeles with a girl friend. Both seem to have caught the disease: Now that the patient had returned home her mother had begun to itch also. Besides the trouble on the left breast, some old indistinct runs were found between the fingers, evidently with the contents killed by a previous, badly applied, ineffective treatment. A five per cent. creolin salve cured the disease.

ECZEMA OF THE NIPPLE IN A LYMPHATIC WOMAN.

Case II.—The patient was an unmarried school teacher, twenty-two years of age, a delicate, thin, anemic woman, with a decidedly seborrheic type of skin. She first consulted us in July, 1911, for a seborrheic eczema of the fingers, and she had redness across the bridge of the nose just above the tip, and blepharitis marginalis. She suffered from blackheads, oily seborrhea of the scalp, excessive sweating of the palms and axillæ, and she had a delicate white skin subject to branny desquamation. Unfortunately, her school room was a damp basement, especially unsuited to her constitution, susceptible to catarrh.

Her maternal grandmother and two maternal aunts died of consumption, and her father grew grey at an early age and died of cerebral hemorrhage. Her mother suffered from diabetes in her early sixties, and died from its effects. The patient's antecedents, therefore, were anything but fortunate. Her sister, who did not have eczema of the nipple, but was constantly subject to cutaneous troubles, was the exact type of the socalled lymphatic, as described by Sabouraud. She was a soft, delicate girl with a round, plump face, round limbs and a delicate white skin, which gave her the false appearance of being in blooming health.

The patient under consideration had both nipples affected with a heavily crusted impetiginous eczema covered with thick, yellow, brittle crusts. This was refractory to many forms of treatment usually successful in such eczemas until we finally painted it with equal parts of ichthyol and water, under which it cleared up admirably. There is always a tendency to recurrence, however, and occasionally it has been found advisable to use other remedies, such as nitrate of silver solution.

UNCOMPLICATED AND LIMITED STREPTODERMIA OF THE NIPPLE.

Quite distinct from the foregoing were the two following cases:

CASE III.—A woman, fifty-eight years of age, engaged in farm work, ran to overtake a horse that was running away and struck herself against the buggy wheels. She was bruised in many places, including the left nipple, which bled a little at the time. All the lesions cleared up in due time, excepting that on the nipple, which continued to ooze a clear or turbid serum. The surface from which this oozing took place was smooth, red and raw, and looked like a superficial burn. This condition had lasted over four months. There was no induration either in the nipple or in the breast. There was an enlarged, soft, lymphatic nodule on the thoracic wall of each axilla, probably the result of wounding her fingers in her rough work. She was in perfect general health.

CASE IV.—Almost the exact counterpart of Case III, except for longer duration and lack of an immediately foregoing traumatism, was that of a physician's wife, fifty years of age, who had inverted nipples, which had been itchy for years. On the left nipple there was a slight fissure in a bright red field and oozing a clear serum. This resembled streptococcic infection as seen in fissures behind the ears and at the corners of the mouth, and was so diagnosed. Treatment with ichthyol, boric acid soakings, and other measures adapted to this diagnosis, secured an apparent cure in both cases. This result was fortunate in the first because the patient was anxious lest her trouble might be cancer, and as a matter of fact, she ran danger of undergoing radical removal of the breast. In these last two cases, which differ decidedly from the first, the question of a commencing Paget's disease arises. We do not think this is the case, but it is always well to hold such an opinion in reserve.

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A Case of Rhinophyma and Its Cure*

By J. EASTMAN SHEEHAN, M.D., F.A.C.S.,
New York.

CASE.—The patient, a man aged fifty years, was referred to me by Dr. Cohen. His left arm and leg were paralyzed from an attack of apoplexy some five years past, and he had a hideous deformity of the nose, which so incapacitated him that it was impossible for him to obtain work. Since the repair of his nose, he has obtained a position receiving twenty-five dollars a week.

Rhinophyma is a disease which is the outgrowth of acne rosacea. This condition generally results in either a moderate or a severe nodulolobulated disfigurement of the nose. As a result of a persistent hyperemia, there occurs a hyperactivity of the sebaceous glands, a dilatation of the bloodvessels, ending in hypertrophy of the skin, due to new connective tissue formation, with the result that there is produced many follicular sinuses. The disease generally affects the lower anterolateral aspects of the nose, that is, the part of the nose which is supported with cartilage and which gradually blends

*Case presented before the Laryngological section of the New York Academy of Medicine, November 22, 1922.

FIG. 1.—Rhinophyma, before repair.

FIG 2.—Rhinophyma, after repair is complete.

itself with the normal skin, covering the bony framework. In some cases, there is present a true osteitis of the nasal bones and the nasal processes of the maxillæ, producing a wide upper nose, thereby adding to the deformity. This added deformity must be corrected by wedging the bones (1).

Operation.—The parts were cleansed with soap and water followed by alcohol and ether, until there was a decided glow. The mucous membrane of the nose was anesthetized with two per cent. cocaine muriate, and the external skin of the nose widely infiltrated with one half of one per cent. solution of novocaine. With a graft knife of the Thiersch order, the hypertrophied skin is completely shaved down to the sinus epithelium. Bleeding, which is likely to be smart, is generally controlled by applying pressure. As a result of the shaving process, which is carried to the basal line of the sinus epithelium, there results a raw area dotted here and there with bits of epithelium, which causes a quick epithelization of the parts. The exposed raw area is covered with ambrine gauze as used at Sidcup, England. As a rule, after ten days, epithelization is complete.

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Tuberculosis Papulonecrotica with Serpiginous Lesions Resembling Tertiary Serpiginous Syphiloderm*

By MAX SCHEER, M.D.,

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Grouping of lesions in papulonecrotic tuberculides sufficient to cause a marked resemblance to tertiary serpiginous lues has been rarely observed. Jadassohn (1) has observed in adults a variety of tuberculide characterized by the tendency to grouping but with the absence of necrosis. The case reported here was characterized by the presence of well developed necrotic lesions as well as grouping.

CASE.—F. H., female, forty years old, married fourteen years, occupation housewife, born in Hungary and ten years in this country, consulted us at the Mt. Sinai Skin Clinic on September 28, 1921. Her family history was negative.

She had had measles in childhood but none of the other exanthemata. She also suffered during childhood from frequent attacks of sore throat. Thirteen years ago, she had a miscarriage following a fall at four months of pregnancy; had had no other pregnancies. She had never had a serious illness. She had had occasional attacks of cough, but no other symptoms suggesting visceral tuberculosis.

Her present illness began twenty-five years ago, with pustules on the legs. These pustules dried into crusts which fell off in a few days leaving pitted scars. New lesions appeared more or less constantly since, affecting the lower extremities in their entire extent. The lesions on the hands and elbows first appeared five years ago. These never became pustules nor necrotic. Before coming to this country the patient was under treatment at the Allgemeine Krankenhaus in Vienna in the service of Prof. Ehrmann. She was told that her disease was tuberculide. She was treated with x rays. No antiluetic treatment was given.

On both lower extremities throughout their entire extent, but most marked on the buttocks, knees and ankles, were numerous circular and oval, flat or pitted scars from a pin head to a quarter of an inch in diameter. On the inner and outer sides of both ankles were numerous dry reddish brown pea-sized papules. The tops of some of these were

*From the Mt. Sinai Dispensary and the Vanderbilt Clinic.

necrotic. On the outer side of the left ankle these papules were arranged in a serpiginous configuration surrounding an area of pigmentation and scarring strongly suggesting tertiary lues. In fact, when

Fig. 1.—Lesions on knuckles of left hand.

first seen by colleagues at the clinic and at the Academy of Medicine, several were unwilling to make a differential diagnosis, while one unhesitatingly called it lues.

On the knuckles of the left hand were numerous violaceous dry and firm papules, the largest an eighth of an inch in diameter. Two similar lesions were present on the knuckles of the right hand on the index and ring fingers. These lesions were smooth and showed no scaling nor necrosis.

On the tip of the left elbow was a violaceous infiltrated plaque three quarters of an inch in diameter; one inch below the lesion was a firm subcutaneous nodule, irregular in outline and about the size of a marble; overlying skin was violaceous in color. The lesion was movable on the deeper parts. No subjective sensations were present in any of the lesions.

Between the angle of the jaw and the lobule of the left ear was a mass the size of a pigeon's egg. This was irregular in outline, movable, covered by normal skin, and somewhat firm. It had been present three or four years and gave rise to no trouble. Unfortunately the patient refused to have this excised. There was a moderate thyroid enlargement but no symptoms were present referable to thyroid disturbance. Physical examination of the internal organs was negative. On September 29, 1921, a physical and x ray examination of the lungs showed no evidence of active tuberculosis.

A routine urine examination was negative. A Wassermann test on admission at the Mt. Sinai Clinic was reported anticomplementary. On October 13th, a Wassermann test done at the Vanderbilt Clinic was anticomplementary.

A biopsy was made from lesions on the left foot and the left hand. The pathological report by Dr. D. L. Satenstein was as follows:

Low power. Throughout the entire cutis were foci of closely packed cells of various types. In places these foci had a tendency to be conglomerate, especially marked in the mid cutis. Throughout the entire cutis, especially marked in its upper portion, was a varying degree of inflammatory reaction. The vessels were dilated, some were filled with blood; the perivascular lymphatic spaces were dilated and a moderate number of cells were present about the vessels. The connective tissue throughout was edematous and in some places degenerated. The epidermis throughout was more or less uniformly thickened.

High power. The nodules were composed mainly of epithelioid, connective tissue and round cells. The protoplasm of the epithelioid cells was granular; the outline of the cell body was indistinct; an occasional mitotic figure was present. There was no distinct tubercle arrangement. The connective tissue fibres within and immediately around these nodules were fibrillated, broken and in some places granular. In the centre of one of these areas was a typical giant cell (chorioplaque type). The perivascular infiltration was predominantly round cell. Outlying this infiltration were irregularly scattered epithelioid cells. An occasional plasma cell was noted lying between the connective tissue bundles without any relation to the vessels or nodules.

The walls of the vessels in the subpapillary zone were thickened, due to edema. There was no hyperplasia. The endothelial cells were swollen and projected into the lumina. The lymphatics in this area were moderately dilated with the endothelial cells projecting. The vessels in the papillary bodies were markedly dilated and the endothelium swollen. The deep vessels were similarly thickened due to edema. There was some vacuolization within the vessel walls.

In the deeper tissue, where there was a large nodule, some newly formed bloodvessels were visible. At one edge of the tissue there was a marked degeneration of the connective tissue fibres; they were fragmented and granular. Broken down poly-

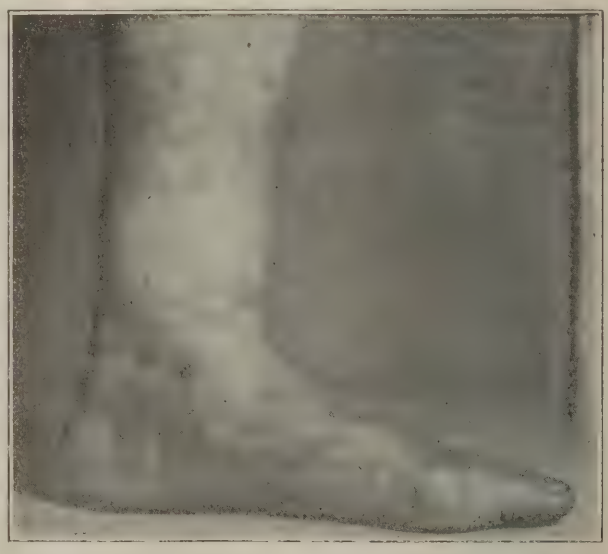

Fig. 2.—Lesions on ankle of left foot.

nuclear leucocytes were present (granular degeneration). This area was independent of the nodules. The epidermis presented acanthosis and marked parakeratosis. Tubercle bacilli were not found.

From the absence of hyperplasia of the vessel walls and absence of perivascular plasma cell infiltration syphilis can be excluded.

The presence of nodules with the epithelioid as

the characteristic cell, the presence of a giant cell within a nodule, thickening of vessel walls due to edema and not hyperplasia, the presence of newly formed vessels in the nodules and degeneration of connective tissue, all would point to a tuberculous process. Grouping the clinical with the pathological findings we concluded that we were dealing with a tuberculide which might be designated as a tuberculosis disseminata nodularis.

The lesion from the foot resembled the one just described, differing in that the nodule formation was deeper. The nodules were separated from each other by larger areas of degenerated connective tissue, which was a predominant feature in the slide. The character of the cells was similar to that described above. The inflammatory tissue reaction had a tendency to be more superficial and there were more degeneration and vacuolization of the cells of the vessel walls. Nowhere did we find hyperplastic vessels or perivascular plasma cells nor any of the usual findings found in syphilitic tissue.

The patient received arsphenamine injections intravenously, as follows: October 18, 1921, 0.3 grams; November 3, 1921, 0.3 grams, at which date the Wassermann test was negative with two antigens; November 10, 1921, 0.3 grams; November 17, 1921, 0.3 grams; November 29, 1921, 0.3 grams, and December 8, 1921, 0.3 grams.

After the second injection a slight improvement was noticed, especially in the lesions on the ankles which became flatter, though there were still some necrotic papules. Most of the improvement occurred on the right ankle. The nodules on the hands were slightly smaller but otherwise unchanged. There was no change in the elbow lesions.

At the completion of the six injections all lesions had disappeared from the hands and ankles and the right elbow; those on the left elbow were somewhat smaller. There was no change in the mass on the left side of the neck.

The patient returned for observation on March 7, 1922, stating that new lesions had been appearing for the past three weeks. At this time there were new nodules on the dorsal surface of the left hand and on both ankles, similar to the original ones and some even larger.

On March 8th a nodule was excised from the left hand and a guineapig inoculated by Dr. Hopkins. The animal was killed in six weeks. At the point of inoculation a nodule was found which on histological examination proved to be a foreign body tubercle; two nodules were found in the spleen which showed no evidence of tubercle structure. No evidence of tuberculosis was found. The patient received arsphenamine again.

While the nodules disappeared from the left hand, the outbreak of new ones during the period of salvarsan administration was striking. Three dark red elevated nodules one quarter inch in diameter appeared on the anterior surface of the lower third of the left leg. Two appeared on the left elbow and several on the left foot.

Status on May 4, 1922, was as follows: Dorsal surfaces of hands were free from lesions. There was a violaceous patch on the tip of the left elbow but no nodule. The tip of the left elbow showed two nodules. The mass on the left side of the neck was unchanged. There were about a half dozen new papules around both ankles. They were slightly elevated, a few discharged pus, but most of them had a yellowish white, dry, adherent crust. The recently healed lesions left violaceous macules, the older ones brown spots. On the left leg, just above the ankle, there was a raised, violaceous and tender nodule half an inch in diameter and indistinguishable from erythema induratum. Two similar nodules were situated nearby on the anterior surface of the left ankle.

On May 12th, Dr. Ornstein made the following tests: The Von Pirquet cutaneous reaction was positive. The patient reacted violently to one in two thousand milligrams of old tuberculin intracutaneously with both local and general phenomena; also to an autourine inoculation.

On September 15th the patient was examined by Dr. Ornstein, when she presented the following findings: Right lung, normal breath sounds; no adventitious sounds heard. Left lung, dullness anteriorly to the second rib and posteriorly to the fourth vertebral spine; bronchovesicular breathing anteriorly to the first rib. A few fine mucous râles were heard at end of respiration; the râles were not constant, and disappeared after coughing. There were diminished breath sounds to the fourth vertebral spine and bronchovesicular breathing between the fifth and eighth vertebral spines. Subcrepitant and coarse mucous râles were heard at the base; the râles were constant and increased by respiration.

X RAY REPORT.

Right lung.—The root shadows were exaggerated and extended out slightly into the parenchyma of the lung. There were many calcified areas (probably calcified tubercles) ranging from the size of a bean to a hazel nut. There was also peribronchial infiltration of the vertebral trunk.

Left lung.—The root shadows were exaggerated. There was infiltration of the vertebral trunk and trunks to the first and second interspaces; there was a calcified tubercle in the circle of the first rib.

Diagnosis.—Old healed root tuberculosis and peribronchial tuberculosis.

At the time of this examination there were many active lesions of the same character as described above on the hands and ankles.

SUMMARY.

The case described presents lesions of papulonecrotic tuberculide simulating a serpiginous syphilide.

Under antisyphilitic treatment some of the lesions retrogressed temporarily but reappeared in the midst of further antiluetic treatment (arsphenamine).

The histological picture and the laboratory tests corroborate the diagnosis of tuberculide.

There are cases of papulonecrotic tuberculide which so closely resemble syphilis that a clinical diagnosis is made with the utmost difficulty.

I wish to express my thanks to Dr. Fordyce for his courtesy in extending to me the privilege of using the laboratory at the Vanderbilt Clinic and to Dr. Andrews for the photographs.

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The Choice of Operation in Gastric and Duodenal Ulcer*

By RAYMOND P. SULLIVAN, M.D., F.A.C.S.,
New York.

The management of gastric or duodenal ulcer cases should always include careful search for distant foci of infection, and when found treated appropriately, thus removing a probable etiological factor of the ulcer. Further, I believe it a wise practice for surgeons to request a competent medical treatment of these patients, especially in the early cases, because of the advantages, not only for the ulcer, but the patient in general. The principal determining factors which warrant surgery in these cases are: 1, acute perforation; 2, recurrent hemorrhage; 3, chronic, obstinate cases with or without obstruction; 4, persistent recurring pain which may indicate a localized peritonitis or penetrating ulcer. While this grouping may be considered a general plan, we frequently meet a problem of economics in these patients, which will mitigate against a comprehensive medical treatment, because of the time element involved, the inconveniences of diet schedule, and other conditions. This group should be offered surgery early because it is a more direct method of treatment, which, in a majority of cases, will greatly minimize the time element.

The choice of operation in the treatment of gastric and duodenal ulcer is still a debated procedure, controversy on this subject in surgical circles being hardly less animated now than it was twelve or fifteen years ago. At that time the subject of discussion was whether or not simple gastroenterostomy or a more radical procedure, such as excision or resection, was preferable. Opinion is still far from being unanimous, and the formulation of a routine procedure in ulcer of the upper digestive tract would seem to be out of the question, in view of the fact that the surgeon's further procedure must be governed by the findings at operation.

The individual operative methods in general use for ulcer of the stomach, as well as of the duodenum, may be divided principally into two groups: 1, those in which the ulcer is left to itself and simple gastroenterostomy with or without exclusion of the pylorus is done; 2, those which are directed against the ulcer as such, viz., excision or cauterization, partial resection of the stomach or duodenum, and reconstruction of the continuity of the digestive tract.

GASTRIC ULCER.

In the surgical treatment of gastric ulcer the customary methods may be briefly enumerated as follows: 1, excision alone; 2, excision plus gastroenterostomy; 3, resection of the ulcer bearing area; 4, jejunostomy for massive ulcer.

Briefly commenting on these various procedures, it may be stated that excision alone will find its most frequent use in ulcers of the cardiac end, or small ulcers along the anterior wall. Excision plus gastroenterostomy will find its most frequent use when the ulcer is situated distal to the Hartman line, principally in the pars pylorica, on either the anterior or posterior wall or lesser curve. Resection will find its most frequent use in multiple ulcers of the pylorus, or pars pylorica, or large callous ulcers of the pars media, or in any ulcer that has the slightest suspicion of malignancy. Sleeve resection is utilized in suitable cases, particularly in the presence of hour glass contraction situated in the pars media. Ulcer excision may be done with knife or cautery, or cautery destruction may be the method of excision. No matter where the ulcer is situated in the stomach, excision or destruction of the ulcer should be considered. Resection is indicated in ulcers of large size, or those having the slightest suspicion of malignancy. In acute perforating ulcers, practically the same technic is applicable as in chronic gastric ulcer, although the question of peritonitis must always be considered when the most appropriate procedure is being determined. The simpler the technic the more rapid the operative procedure in acute perforating ulcer, the better the prospects of a successful outcome.

The success of gastroenterostomy rests principally on mechanical rather than chemical grounds, as after its performance the peristaltic wave is lessened, with the result that by securing mechanical rest, physiological rest is secured at the same time, and the ulcer is given opportunity to heal. Hardt has recently pointed out that the pain of gastric or duodenal ulcer is primarily due to the peristalsis acting on an irritable focus, and that all medical measures by which gastric acidity is neutralized or suppressed also inhibit the gastric peristalsis and thus relieve the pain.

The effect of different operations for gastric ulcer upon the motor function of the stomach was recently discussed in the transactions of the Petrograd Medical Society, where Dehn pointed out that conditions following resection, according to Billroth II, are unphysiological, gastric atony being rendered worse than before operation. In resection, according to Billroth I, the physiological conditions may be restored. There was considerable discussion concerning the removal of the pylorus as being of greater importance than the removal of the ulcer. Following resection, according to Billroth II, the peristaltic wave could be shown to pass only along the greater curvature, because the annular muscle is a fanshaped arrangement in the lower gastric segments; so that in resection more fibres are divided on the lesser than on the greater curvature. Some adherents of gastroenterostomy assert that gastric ulcer is a general disease and therefore prone to return even after a so-called radical operation. Gastroenterostomy yields good immediate results and is less dangerous than resection, having a mortality of one half that of resection. The useful Polya operation is really a gastrojejunostomy following pylorectomy. Balfour's modification of the Polya operation is really an anterior gastroduodenostomy in continuity. This anterior operation seems to have found a wide acceptance, and has proved valuable in many of my cases.

Gastroenterostomy is advisedly added to cautery excision as well as to knife excision of gastric ulcer.

*Read before the Brooklyn Surgical Society, February 1, 1923.

Balfour's cautery excision or destruction of the ulcer may be applied in a large percentage of cases, and entails a minimum of operative risk. Both the opponents of gastroenterostomy and of resection are agreed in recommending cauterization after gastrostomy in suitable cases.

The adherents of resection affirm, in its favor and against gastroenterostomy alone, that after the latter the adhesions still persist, the stomach remains fixed, and the pain may continue. The postoperative course is simpler, after resection, and is less likely to be complicated by hemorrhage or perforation of the ulcer. The mortality of resection in the stage of hemorrhage is estimated by Finsterer as 6.2 per cent., and is expected to decrease still further if the patients come to operation sooner than is usually the case. Finsterer's employment of novocaine conduction anesthesia, instead of deep general anesthesia, is attracting considerable attention at the present time. It is also stated that recurrences are rather frequent after gastroenterostomy, but very rare after resection. Another objection, often raised against gastroenterostomy, is the possible onset of peptic ulcer in the jejunum—the cause of this grave complication being due to the pylorus, which must therefore be removed.

In Fedoroff's opinion gastroenterostomy, although yielding a lower mortality than the radical operative procedure, cannot be regarded as the operation of choice in the treatment of gastric ulcer, being indicated only in cases associated with obstruction; whereas, in all the remaining cases radical intervention is indicated.

Another Russian operator, Hesse, also defends resection, calling attention to the conservative views of the majority of both European and American surgeons. Hesse performs resection according to Billroth, in gastric ulcer, preferably Billroth I, considering the removal of the pylorus the most important point. He considers resection contraindicated in patients who are in bad general condition, or in ulcers situated near the esophagus. In the discussion of Hesse's recent address, Grekow opposed resection and defined the routine performance of this operation as an exaggerated procedure, pointing out that resection ignored the etiology of ulcer. He therefore advocates gastroenterostomy, to which he invariably adds pyloric exclusion. The only indication for resection, in Grekow's opinion, is found in those cases where there is reason to suspect malignant degeneration of the ulcer.

Hesse's opinion is supported by Oppel and Petroff. On the other hand, Kornen emphasized that although gastroenterostomy at first gives good results, up to ninety-five per cent., the permanent results are not so satisfactory. He stated that experience at autopsy or repeated operation showed that part of the recurrences were due to displacement of the gastroenterostomy opening, and this is especially apt to be the case with an open pylorus, viz., in ulcers of the gastric fundus. Gastroenterostomy is, therefore, more rational when the pylorus or duodenum is involved than in ulcer of the fundus, especially as in the former groups the ulcer can be protected against mechanical irritants by autoplastic exclusion methods. Kornen, therefore, prefers excision to gastroenterostomy, unless multiple ulcers or severe adhesions are present. The last named cases involve serious technical difficulties and the mortality is high, so that gastroenterostomy is preferable as it serves also to improve unfavorable conditions and the chemistry of the stomach contents.

Haberer, in Germany, points out the disposition to ulcer formation is removed by resection. Krause advises that resection should be restricted to ulcers of the gastric fundus and pyloric ulcer associated with chronic hemorrhage, or incipient perforation.

The operation of jejunostomy has not many advocates in this country as a surgical procedure in the treatment of gastric or duodenal ulcers. However, it will be useful in the presence of chronic hemorrhage, especially of the weeping type where total gastric rest is desired. Further, it may be found the procedure of choice in the presence of massive ulcer, especially of hourglass type, when more radical procedure is impracticable or too hazardous because of the poor general condition of the patient. I have used it on two occasions. In one it proved very satisfactory and permitted secondary resection with successful outcome. In the second case death resulted in two months after operation. The case was one of repeated hemorrhage, yet in spite of transfusions and careful search for bleeding points death resulted from a massive gastric hemorrhage.

We may then consider that the surgical treatment of gastric ulcer should consist in excision or cauterization of the ulcer with posterior gastroenterostomy in the majority of cases. It is in cases especially of the callous type that resection finds its chief adherents. But there are authentic observations proving that ulcer of the stomach may be successfully treated by means of simple gastroenterostomy. The pendulum must not be allowed to swing too far back, however, in the form of unconditional rejection of resection in the treatment of these patients. Recourse, fortunately, can always be had to gastroenterostomy in those cases where for some reason or other resection appears impracticable or difficult.

DUODENAL ULCER.

In the surgical treatment of duodenal ulcer as distinguished from gastric ulcer, the principal operative procedures are represented by 1, posterior gastroenterostomy alone, judiciously selected and performed; 2, cautery destruction plus gastroenterostomy; 3, excision of the duodenal ulcer alone; 4, excision with some form of pyloroplasty; 5, radical resection of the duodenum as advocated by Finsterer. The fact has recently been emphasized by Guerry and others that, according to the statistics from many sources, gastroenterostomy alone will bring relief in more than eighty per cent. of all cases of duodenal ulcer in which operation is performed, due to the fact that the stomach is put mechanically at rest and the ulcer is no longer irritated by peristaltic waves. Gastroenterostomy is undoubtedly not infallible in all cases of duodenal ulcer, but the vast majority of its failures have been explained by Moynihan as due to three, more or less avoidable, causes: 1, absence of an intrinsic lesion in the stomach or duodenum; 2, incomplete operation which leaves a diseased appendix or gallbladder to act as a focus for recurrent infection; 3, faulty technic. To this group C. H. Mayo adds gastrojejunal ulcers. Stating that gastroenterostomy when properly selected and carried

out has offered exceedingly good results in the treatment of duodenal ulcer. Judd believes it best to continue to use this method in most cases. He emphasizes that duodenal ulcers should not be excised unless the technical steps of the operation can be performed satisfactorily, which is possible only if the duodenum is mobile or easily mobilized.

Pyloric exclusion in any form in the presence of duodenal ulcer is rejected by most surgeons of today principally because it fails to prevent the contraction of the gastroenterostomy opening. Moreover, it has by no means been established that duodenal ulcers heal more readily after pyloric exclusion than after ordinary gastroenterostomy. Fedoroff emphasizes that the gastric acidity after pyloric exclusion is not diminished to the same extent as after simple gastroenterostomy, resulting in one of the conditions which favor the origin of jejunal ulcer. Sheeren reports that a large number of jejunal ulcers follow pyloric exclusion, and that this operation has been abandoned in the London Hospital. It would seem, therefore, that plication of the pylorus, with gastroenterostomy, possesses merely a palliative value. Resection of the duodenum in the presence of duodenal ulcer has become the operation of choice according to Haberer and Finsterer. The latter combines an extensive resection of the pylorus as a combination, arguing that the smaller the stomach remnant, the smaller will be its secreting surface, hence less prospect of the production of peptic ulcer of the jejunum.

Concerning the choice of operation in duodenal ulcer, it is evident, from a review of opinions, that gastroenterostomy is still holding its own as the safest and most desirable method of procedure. However, Judd points out that there are undoubtedly a group of cases in which it seems well to excise the ulcer in preference to performing gastroenterostomy. Although convinced that the excision of duodenal ulcer will never become a general practice, or take the place of gastroenterostomy, Judd recommends excision as particularly indicated if the entire ulcer can be excised and the duodenal lumen maintained, and if the entire operation can be more easily done than gastroenterostomy. Excision is also given the preference in ulcers of the type that bleed during an attack, or in ulcers associated with local pain but with inconsiderable symptoms of dyspepsia. Ulcer excision is better than gastroenterostomy if the gastric acids are not high, and especially if the patient has a tendency to neurasthenia. In all favorable cases for excision, the application of a pyloroplasty should be considered.

The selection of the proper operative procedure in ulcer of the stomach as well as of the duodenum, involves the necessity of a careful study of the causes back of the ulcer formation, together with their discovery and removal, in order to guard against recurrences and other complications for which the surgical intervention as such is not necessarily responsible. Not only expert technic, but also the scope of the operator's surgical horizon, if I may so express myself, will raise or lower his standard of cures, while at the same time guiding and governing the choice of operation in the treatment of gastric and duodenal ulcers.

270 Park Avenue.

Relative Brain Weights in Animals

By H. F. SLIFER, M.D.,
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Report of observations made on the relative proportion of the brain weight to the body weight of certain animals:

	Body.	*Brain*	*Relation*
English sparrow, male	504 gr.	16 gr.	1/31
English sparrow, male	456 gr.	14 gr.	1/32
English sparrow, male	480 gr.	13½ gr.	1/35
English sparrow, female	480 gr.	14 gr.	1/34
English sparrow, female	442 gr.	12 gr.	1/35
Field sparrow, male	480 gr.	13½ gr.	1/35
Field sparrow, female	401 gr.	14 gr.	1/28
Wood pewee, female	408 gr.	7½ gr.	1/54
Canary, male	360 gr.	8½ gr.	1/42
Canary, female	180 gr.	7½ gr.	1/24
Robin, male	1164 gr.	24½ gr.	1/47
Robin, female	1502 gr.	23 gr.	1/65
Quail, male	3360 gr.	16 gr.	1/210
Quail, female	3360 gr.	17 gr.	1/197
Pheasant		40 gr.	
Crow, female	7720 gr.	135 gr.	1/57
Owl, small horn, male	3360 gr.	85 gr.	1/39
Owl, small horn, female	2400 gr.	74 gr.	1/33
Prairie chicken	19 oz.	38 gr.	1/240
Prairie chicken	21 oz.	34 gr.	1/296
Hen, young	72 oz.	54 gr.	1/640
Cock, young	56 oz.	60 gr.	1/448
Duck, male	6 lb.	70 gr.	1/600
Duck, female	5¼ lb.	100 gr.	1/367
Goose, male	8½ lb.	180 gr.	1/375
Mouse, male	282 gr.	5½ gr.	1/51
Mouse, female	247 gr.	6 gr.	1/41
Field mouse, female	540 gr.	10 gr.	1/54
Mole, male	3 oz.	16 gr.	1/90
Rat, male	11 oz.	34 gr.	1/155
Rat, female	7¼ oz.	29 gr.	1/120
Cat, male	8 lb.	464 gr.	1/121
Wild rabbitt, female	2 lb.	104 gr.	1/134
Tame rabbit, female	5 lb.	154 gr.	1/227
Squirrel, grey	no weight	94 gr.	
Squirrel, red	no weight	60 gr.	
Opossum, male	8½ lb.	88 gr.	1/675
Skunk, male	4¾ lb.	170 gr.	1/207
Porcupine, female	11 lb.	250 gr.	1/308
Pig, male	175 lb.	4½ oz.	1/622
Bull	1340 lb.	17 oz.	1/1261
Ox	940 lb.	12 oz.	1/1253
Cow	750 lb.	12½ oz.	1/960
Horse	1160 lb.	21 oz.	1/884
Frog	4½ oz.	4 gr.	1/540
Trout	1 lb.	10½ gr.	1/666
Spanish mackerel	3¼ lb.	18 gr.	1/1458
Mackerel	4 lb.	28 oz.	1/1000
Flounder	3½ lb.	22 gr.	1/1114
House fly	¼ gr.		
Head of fly	1/20 gr.		

116 Main Street.

Historical Medicine

Hydrophobia: Four Hundred Years Ago

By HON. WILLIAM RENWICK RIDDELL, LL. D., F. R. Hist. Soc., Etc.,
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The celebrated and most learned physician, mathematician, philosopher, poet and Latinist, Girolama Fracastoro (or Fracostorio, Lat. Hieronymus Fracastorius) of Verona is now known only from being the inventor of the word syphilis which first saw the light in his *Syphilidis sive Morbi Gallici libri tres,* published at Verona, 1530—a Latin hexameter poem in three books. But he wrote many and published some other Latin works, some in verse, others in prose. One of his prose works is *De Contagionibus et Contagiosis Morbis et eorum curatione* (*Contagions, and Contagious Diseases and Their Treatment*). This is in three books of which the first deals with contagions generally, the second with contagious diseases and the third with treatment. It is proposed in this paper to give some account of his views concerning rabies, interesting as it is both from a historic point of view and the elegance of the language.

Rabies is first named in Lib. II, cap. x, p. 170 (1): he says that according to Galen this disease exists *per se* (2) only in the dog; and that according to Aristotle, every animal bitten by a mad dog becomes rabid except man—and they are nearly right. In his first book, he had divided contagions into three classes, 1, those by direct contact only; 2, those by direct contact and by *fomes,* i. e., substances like clothes, etc., which not attacked by the disease themselves act as a nidus for *seminaria* of disease, and 3, those by direct contact, by *fomes* and by action at a distance. Rabies is of the first class: not every contact, however, is effective but only contagion introduced by the blood itself by the tooth and froth of the rabid dog, the skin being broken and blood drawn. The contagion is sluggish, rarely does it appear before twenty days, generally after thirty, often not for four or six months, sometimes a year, and sometimes after five years. Fracastoro had himself seen a boy who died of it, in whom the disease manifested itself after eight months. In the meantime there is no fever or other ill, but when the contagion at length reaches the heart, "it afflicts the man with unspeakable torture, the heart and precordia are lancinated (vellicantur), the sick man can neither stand nor be still, but torn this way and that, like a madman, he tears his body with his hands, he has a raging thirst, but the worst is that he dreads water and all liquids so much that he would sooner die than drink or be brought to the water—then, too, they bite others, frothing and with wild eyes, and at length worn out they miserably breathe out their life." It is said (3) that if anyone formerly bitten by a mad dog lie under a sorb apple tree, he will again become mad. This, *"si modo verum est"*—if it is true (4), (as the author wisely says) is due to styptic and melancholic vapors exhaling from the tree, carried to the man and being heated within him producing *seminaria* of the disease on account of the diathesis (dispositio) left behind by the previous rabies.

Fracastoro held the universally accepted theory of four humors in the body on the condition and due proportion (crasis, temperamentum—mixture, combination) of which health so much depended. Sanguis (blood), phlegma or pituita (phlegm or rheum) chole or cholera (yellow bile) and melancholia (black bile): and considered that rabies was due to the last named. He gives as reasons for this conclusion that the rabid act like melancholics (5) and the dog is by nature very melancholic. Moreover the contagion has analogy only to phlegm and melancholia: the phlegm is much more abundant than the melancholia (6) and if the contagion had its seat in the phlegm the disease could not be so long in making its appearance.

Other animals than man become rabid and die when bitten because of the wild nature (feritas) in them like in dogs so that in case of contagion they must become rabid by analogy: but the nature of man is far different, far removed from this wild nature and analogy, "whence it happens that not all who are bitten even become rabid but many by reason of their natural constitution (temperatura) either do not contract the contagion at all or if they do, survive." Probably that is what Aristotle meant.

It is difficult to give the reason why the dogs themselves and those who have been bitten by them have such a fear of water. No credence is to be given to Aetius and many other who say that *hidrophoui* fear water because they imagine they can see puppies (*catulos*) in it—some just beginning to fear water being asked, said they did not see anything of the kind. Nor does it arise from any affection (indisposition) of stomach or tongue as in some diseases—for there is thirst and so far as the tongue is concerned, it longs for and seeks what is wet—the defect is in the imagination (phantasia). Perhaps the imagination awakens the memory of some past events which are wont to inspire fear—when they see the froth around the mouth and feel their heart melting within them (liquescunt), the imagination conjures up some fluid drowning them, whence the fear when they touch liquids or hear liquids offered to them (7).

TREATMENT.

In Book III, cap. ix, pp. 251, sqq., we have the treatment fully explained. This is, like carbuncle (called by the Greeks, anthrax) and gangrene but even more so, a disease for which if it be not attended at the very beginning, there is no cure; accordingly its symptoms and immediate treatment should be known to all. "But in rabies," says Fracastoro with some humor, "the priests to whom those bitten are immediately brought act better than the doctors for they, exercising the religion of operators and the office and instruments of medical men, themselves burn the spot" (8). Everyone should know that if it be possible, the bitten place should be burned, i.e., cauterized with the actual cautery. It would be better,

however, first to scarify the wound and cup it with a large cupping glass, then burn so deeply as to reach the *seminaria*—the cautery should be glowing hot iron, silver or gold. If the actual cautery is considered by anyone too severe (*nimis impium*) you may use caustic medicaments. Where you cauterize take care that a crust is formed using Brassica leaves anointed with butter; and also apply evocant and drying (9) unguents. If you fear that the disease has sunk its roots deeper, do not burn the place; that would drive the poison further in; scarify and use an evocant and drying plaster such as this: (10)

Galbani .. Serapini .. Opoponacis	āā	℥ss
Euphorbii		ʒiii
Iridis ..... Xiridis ..... Aristolochiae Gentianæ ...	āā	ʒiij
Nitri ..... Sulfuris	āā	ʒii
Ceræ	q. s.	..

Evacuants are always to be exhibited—the best are the *hieras,* that of *Archigenes* and that called *diacolocynthidos,* also hellebore than which there is nothing better in this disease if administered in goat's milk whey—Epithymum is also effective and "in general, everything which purges the melancholic humor."

The contagion is checked, too, by medicines which have a particular antipathy; all mention the ash of burned rivercrabs, gentianroot, some mix thus with it. Alyssum is favorably spoken of—the name is derived from its making a man to be without madness (11)—the Arabs call it *alguasce.*

"Nor would those in our judgment err who would exhibit rubia minor either contused or with a little vinegar as a draught, because it is effective against serpents—neither would those who would give syderitis because that is an admirable desiccant. Aetius praises a recipe of a certain old man, oxylapathum used externally or internally—that is not the oxylapathum which is called acetosa (for that is Oxalis) but another which has the pointed leaves and seed among the Lapatha."

NOTES.

1. My copy of Fracastoro is the edition of his works, Geneva, Typis Jacobi Stoer, 1637—it is from this edition that all the quotations are made in this paper.

2. *Per se,* in itself—here it means original, not produced by contagion, etc., but the expression has many shades of meaning in mediaeval philosophy.

3. *Ferunt*—they say—this expression is used by Fracastoro in repeating what is said by others either of his own or former time, without vouching for its accuracy—in most cases, doubt is connotated.

4. He adds *"quod fama quadam circumfertur"*—or is circulated by a certain report. *Seminaria* are the seedplots or nurseries of contagion, formed by the evaporation of insensibly minute particles which occurs in every putrefaction—every contagion contains a putrefaction but not vice versa.

5. Melancholia until the latter part of the eighteenth century includes all kinds of nervous affections from simple "crankiness" through hysteria to actual melancholia. It was long believed to be due to an excess in black bile; about the middle of the eighteenth century the theory made its way that it was due to viscidity or gluiness of the blood.

6. Both phlegm and melancholia are mythical and nonexistent humors.

7. Fracastoro according to his usual custom goes off into a long discussion of the phantasia and its works—how the sick often from seeing small figures on the walls imagine they see wolves and dogs and cry out and demand their removal, etc., etc., but I spare my readers. He does not give any explanation of the fear felt by the dogs.

8. *"Quod in Rabie Sacerdotes melius instituere quam medici, ad quos statim deducuntur, qui demorsi sunt, quos curantium religione tum medicorum officio et instrumentis utentes, urunt enim et ipsi locum."* It will be remembered that until the Council of Tours in 1163 forbade the shedding of blood by monk or priest, the practice of surgery was largely in the hands of the clergy. In Fracastoro's time barbers were the chief surgeons, but in the case of dogbite the priests were permitted to apply the actual cautery and did so without or acting for barber or medical man. The idea of the passage quoted is that the priests acting with the conscientiousness (*religio*) of operators made proper and immediate use of the proper instrument.

9. *"Unguenta quae simul evocent et exiccent"*—unguents which at the same time draw out the poison and dry up the humor.

10. See next note for a glossary of all the plants, etc.

11. Alyssum from the Greek, "a" without, and "lussos" (Latinized lyssus)—madness. What we call alyssum or madwort is a genus of the mustard family, Cruciferæ; we have two species on this continent—*a,* maritimum, the white flowered sweet alyssum of our gardens, and *b,* saxatile, rock alyssum, with yellow flowers—both are importations from Europe.

Archigenes, a noted physician of old who made a wonderful *hiera.*

Aristolochia—birthwort—so called from its supposed value in childbirth; we have three species on this continent, a. Serpentaria Virginia Snakeroot, b. Sipho, pipevine or Dutchman's pipe; and c. tomentosa, the common snakeroot.

Brassica is here B. oleracea, the cabbage—of course turnips, mustard, wild mustard, etc., are all Brassicas.

Cera wax, here bees' wax.

Diacolocynthidos—a *hiera* of which a main ingredient was colocynth, for the same purpose and with the same effect as Pil, Comp. Col.

Epithymum—Cuscuta Epithymum or Dodder, growing on thyme—thymus vulgaris.

Euphorbium—we now call euphorbia, spurge—this is probably the E. platyphylla naturalized on the Continent from Europe.

Galbanum is officinal.

Gentiana is officinal.

Hellebore is the black species H. niger, Christmas rose.

Hiera—a laxative or purgative medicine—we sometimes have *hiera picra* still: many physicians had their own *hiera,* some of them very famous like that of Archigenes.

Iris—a family of plants has this name—the Iridaceæ: The genus iris has many species, iris, flag, flower-de-luce, etc. This iris is probably the Iris Florentina whose rootstock furnished orris root.

Lapathum is Sorrel, Rumex acetosella—the whose genus of rumex were lapatha.

Nitri—the ordinary nitre or saltpetre but in those days very generally impure—we now expect reasonably pure potassium nitrate.

Opoponax or Lacrymæ panaceæ, an imported gum, yellow externally and white internally, obtained by incision of the trunk of the tree Panax which grew in Macedonia, Boeotia and other parts of Greece.

Oxalis—Oxalis acetosella, woodsorrel.

Oxylapathum—Rumex acetosella.

Rubia—Madder. We have only the Rubia tinctoria, common or dyers' madder.

Serapinum—sometimes called Sagapinum—a bitter red to yellowish gum with a garlic-like odor used as an antispasmodic and emmenagogue. It was obtained from the Ferula Persica. Ammoniacum, another medicinal gum—came from the Ferula Ammonifera in Tripoli.

Sulphur, the native sulphur was always preferred.

Syderites or Heraclea was apparently a Madder, Rubia, or possibly a Betonica.

Thus—Frankincense.

It may be of interest to find what Fracastoro teaches of the treatment of Rabies in dogs. In his poetical work *Alcon, sive de Cura Canum Venaticorum*—Alcon, or concerning the Care of Hunting Dogs—the old hunter Alcon discourses to the young Acastus, concerning hunting dogs, the choice, breeding, training and diseases of them—and the treatment of these diseases. I give the treatment of

rabies here in a translation practically literal: "When struck by a venomous serpent . . . he knows himself how to find a healing grass and cure himself without assistance—but when he experiences rabid bites, mix forthwith Idaean pitch with leaves of rue and sour wine and apply the medicament to the injured part. . . . But what particularly calls for the care of the skilled mind is when inflamed with rabies, he attacks now these, now those, and turning against the master himself, he inflicts the incurable wound. Therefore first of all confine him with a strong chain; then pound to powder with a heavy stone the roots of the field rose, mix with dark linseed and add water from a living spring. This administered as a drink, it is said the dog recovers his original senses and the rabies disappears. Some grind wild figs and old lard; others direct to soften ivy leaves in boiling water until only a third remains and to feed the rabid animal with the leaves and the water at daybreak. Nothing however is so advantageous as at the very beginning to cut out the seeds of the disease with the steel—for where the tongue in its most remote part joins the palate and throat, a wound giving worm is to be found of the color of native gold, which drives the wild hounds (molossos) to madness and fills their mouth with venom, which if any one can cut away (resecare), he will remove the cause of such a terrible disease and the stimulus or madness." Even here the author shows his caution in respect to the operation of medicines—"they say"—"tradunt."

A Sixteenth Century Latin Poem on the Diseases of Nurslings: "Pædotrophia," by Scévole de Sainte-Marthe.—Dr. Charles Greene Cumston (*Annals of Medical History,* December, 1922). Scévole de Sainte-Marthe, member of an illustrious family of Poitou, was born in 1536. He became a star in the legal firmament of France, held the office of surveyor general of finance of Poitou, of president of the paymasters of France, and later of Mayor of Loudun, a position which gained for him the title of "father of his native city."

Copies of this poem are exceedingly rare. It is dedicated to Henry III of France. In this dedication the author states the subject of his poem to be "the manner of nourishing infants at the breast, and of protecting these young and tender plants against the infinity of storms and tempests that menace them, and often cause them to perish at birth."

The poem opens with an invocation to the Muses and Apollo, then comes a song about the exploits of the King, then an exhortation to the author's wife, in which he counsels her to omit no care in protecting her offspring and emphasizes the necessity of mothers nursing their children themselves. The subject of pregnancy is next discussed, and a few precepts given, among them, a warning against too tight clothing, control of the passions and avoidance of sadness and fear, alternation of work with rest, no dancing, careful selection of foods, and control of pathological appetites. After a discussion of birthmarks as the results of maternal imaginings, he counsels women approaching labor to invoke the protection of the Goddess Lucina, three times in a loud voice, then to choose the position most comfortable for being delivered.

The second book describes what should be done when the child is born, stating that formerly the umbilicus retained the two sexes united in such fashion that they formed a single one, although in reality there were two, but after this bond of union was ruptured these bodies became free. If an infant cries weakly after birth, and shows evidence of little vigor, it is a sign that the father is in poor health, or that the child suffered *in utero* from malnutrition, or that it sustained a considerable traumatism at birth. The child should be kept very warm if it be winter, but only temperate if it be summer. The infant's body should be sprinkled with wine. If it is very feeble, it should be warmed by blowing warm breath over it. This is far superior to every other remedy for fortifying an infant, especially if the blower holds in his mouth a piece of cinnamon bark. Washing and cleansing, composing the limbs into their proper shape, and purging with honey are emphasized. The wet nurse and the child's diet are discussed throughout the rest of this book.

The third book deals with the diseases to which very young infants are subject. These are inflammation from the cutting of the umbilical cord, *frænum linguæ,* and various inflammations, tumors and ulcers of the throat and mouth, for the most part due, according to the author, to bad or defective milk. The pain in teething, he maintains, comes from the teeth endeavoring to open up a passage by means of an acrid humor, which serves them as an augur, the boring causing the pain. He prescribes rubbing the gums with a hare's brain or honey. If this fails, the head should be moistened with water and rose water, each tepid, and then covered with a woollen cap. The treatment of constipation, diarrhea, colic, worms, vomiting, insomnia, nightmare and cough, *prolapsus recti,* eczema, smallpox, measles, and epilepsy, are described. Scévole considers insomnia, nightmare and cough as having an identical cause. He states that, when children have taken more milk than their stomach can digest, the milk transforms itself into crudities from which a thick vapor rises. This vapor imparts to their imagination during sleep false mental pictures, and, since the brain by nature is cold, these vapors, entering into its substance, become condensed there as clouds do in the air, and like them fall in rain, hence irritating the throat of the child with their acrid moisture, producing a cough which ultimately settles upon the chest. Smallpox, he believes, is caused by Nature's attempts to expel impurities of the blood. He recommends the drinking of much cold water, and an infusion of honey for both infant and nurse. If the disease proves obstinate, he wisely advises doing nothing, and warns against the custom of the day of employing such violent remedies, with intent to cause the poison to come forth, that these strong drugs cause ulcers of the throat, obstructing respiration. He states that this ill timed method of treating smallpox caused the death of his two children. According to certain of the author's contemporaries, he was the first to advocate bloodletting at the onset of smallpox.

In his discussion of epilepsy, Scévole suggests two causes for this malady: It may result from a sticky pituita overfilling the brain and preventing distribution of the animal spirits, so that the nerves suffer from violent jerks in their endeavor to eliminate that which is injurious to them; or epilepsy may be due to a vapor derived from a cold poison, distributed over the body and finally insensibly reaching the brain, which undertakes to defend itself against the invasion, but the thinner the vapor, the more easily will it penetrate the cerebral substance. The author reminds us that several of the world's great men were epileptics, among them Hercules, Cæsar, and Mohammed.

Editorial Articles

MEDICAL JOURNAL PROGRESS

The year 1924 marked the beginning of a new epoch in the history of this journal. With the first issue of the New Year the name became the *Medical Journal and Record*. This change of name was the result of many years of development. Gradually the field of our contributors and readers has widened until the journal has come to represent the most progressive in medicine of all parts of the United States. Our policy has been to avoid the ordinary static groove into which it is so easy to settle. We have also gone to Europe and secured the best writers we could find there.

So it has come to pass that we have outgrown any purely local functions. Long before the change in name we had become national in circulation and international in scope. Today we feel that we stand as the most progressive medical journal on this continent. So much for the name.

In the course of our progress, we have recently added several new features. Our department of Historical Medicine will deal with the very foundations of the entire glorious achievements of the men who have made medicine what it is today. We shall include from time to time in this department the historical record of many men who have contributed to our present day knowledge of medicine. We owe these men a deep debt of gratitude and to ourselves we owe the acquirement of a knowledge of their lives and work.

The best of our innovations we come to finally. Beginning with the issue of February 6, 1924, each and every issue of the *Medical Journal and Record* will contain a supplement, which will cover a definite branch of medicine with the newest findings in this field. We shall present in each supplement a symposium which will be of value to the general practitioner and also serve as an authentic source of information for the specialist in the particular field represented. The remainder of the articles will be in the nature of original communications covering the entire field of medicine. The supplement will be a very attractive feature of our journal and will be arranged in a manner to facilitate its being bound separately and will be printed on special tinted paper.

Our aim is to create a journal which will be indispensable to every progressive physician. We have never lacked courage to make a change which we believe spelled progress. Our desire is to cooperate with our readers, to be of real service. So we feel another milestone has been passed.

Those of our many friends who have followed our growth and marked our progress will be sure to agree with us. We hope to make many new friends and so broaden our field of usefulness. Each one of our readers can aid by telling some colleague of our plans, aims and achievements. The more physicians we reach, the better will be our service. This in turn will be of benefit to all our readers, yourself included.

May this be the most prosperous year to readers of the *Medical Journal and Record*. May we go hand in hand to do all we can to further the progress of medicine.

THE ART OF LIVING LONG.

It was said once by a keen observer of a somewhat cynical manner of expression, probably a Frenchman, that for one to hope for long life one must take care to choose one's parents wisely. Whether long life is to be desired depends largely on circumstances; health and temperament are leading factors, but, at any rate, everyone is interested in the length of life.

Mr. Alexander Graham Bell some time before his death attempted, if not to solve, at least to come into closer touch with the problem of longevity. In order to do this he studied the records of an ordinary family through several generations. It may be said that while his figures were published privately they are more or less common property and are extremely intriguing. Altogether, 8,797 persons were included in his tables. The crude average of life was 34.61. It should be mentioned that those whose age at death could not be ascertained were included. Again, thirty-five per cent. died before reaching the age of twenty. The first year of life is the most dangerous period. According to the figures collected by Bell the point is brought out that adolescence is also a critical time, the mortality increasing steadily year by year from fifteen to twenty-three years of age. Often, up to the age of thirty-five, the decline is considerable. The curve mounts somewhat during the years thirty-five, thirty-six and thirty-seven. No support, however, is given to the theory that fifty is a dangerous age. The number of deaths remains fairly constant until extreme old age. Somewhat more than seven persons in every hundred lived to eighty or longer.

Some interesting and curious results are given by an analysis of deaths according to sex. Under five, there were more deaths among males. From five to twenty deaths among females numbered the most. From twenty to twenty-five a larger number of males died. From twenty-five to forty-five, the child-

bearing period, the reverse was the case. From that time on the male mortality was always higher. These figures will not be accepted universally, although it is generally agreed that females live longer than males.

The figures, though tentative as to the individual expectation of life, are, in a high degree, interesting. They show that, apart from accident, longevity is very largely a question of heredity. If the parents are both longlived the chances are that the children will be also longlived. Moreover, if one parent dies prematurely and the other lives to a great age, the figures of Bell suggest that, on the whole, the longevity of the male parent counts for more than that of the female. Another point which should interest eugenists greatly is that fertility means long life, that is to say, fathers and mothers who had the most children were the longest lived. In the case of the male this fact expresses no particular significance, but in the case of the female it is quite the reverse. Mothers who died under forty had on the average three to four children. Those who died between forty and sixty had 6.2 children, between sixty and eighty 6.6 children, while those who lived to be eighty or older averaged 7.2 children.

Figures which relate to the only child present a curious problem. The only child, speaking generally, does not live as long as members of a large family, and the larger the family the longer the expectation of life. This does not appear to be difficult of explanation; probably or presumably it is because a large family may be taken as a fair indication of healthy and virile parents. Yet an analysis of the year of marriage in which children were born yields singular and, in a way, disconcerting results.

These figures seem to prove that children born in the first ten years of marriage are distinctly longer lived than those born from ten to eighteen years after marriage. This is easy to understand but the disconcerting part comes after, as the curve goes suddenly up instead of down, so that children born eighteen and nineteen years after marriage are as longlived as the average of the whole. This is mysterious and requires more evidence than Bell's set of figures before it can be accepted as conclusive.

The statistics commented on give one to ponder. One man said that figures never lie while another man, a hard headed Scotchman, gave it as his opinion that statistics, like sausages, depended a good deal upon the old woman who made them. The truth lies probably in the happy mean. Statistics are not always reliable, they can be cooked and can be arranged to fit in with a person's preconceived views almost unconsciously. On the other hand, carefully collected and collated statistics are of the utmost value, but to be conclusive they must proceed from various independent sources, deal with similar conditions, with numerous cases over a considerable length of time. In the instance of statistics on longevity sufficient evidence has been already forthcoming to show that heredity is a potent factor in longevity, by many considered the most potent. With regard to some of the other points raised by the data brought together by Bell they are all suggestive, some more than others, but as said before, much more evidence is needed to clinch them.

BETTER EYESIGHT FOR CHILDREN

Quiet persistence has characterized the effort to give our children better eyesight than the present or past generations possessed. Fifty years of struggle have produced results. Better light and better seats in the schools have done much toward reducing eye trouble, but, when we come to deal with the individual child, certain obstacles are still apparent which as yet prevent full realization of the ideal. Among these obstacles may be mentioned unskilled treatment by nonmedical practitioners, the patronage of such practitioners by many medical men, a prejudice against the use of drops, and an erroneous conception of the use of glasses. We are tempted to intersperse with our remarks on this subject a few of the terse, pithy sentences used by Edwin Harrison in his paper on Eye Health and Safety, published in the *Western Medical Times* for September, 1923. In the interest of absolute truth it should be noted that a certain inaccuracy is always inherent in an epigrammatic style. Thus his statement, "If the child's eyes are properly cared for they will be good in old age," is true, provided they do not become injured by accident or disease, mishaps that no care in childhood can guard against.

"Why trust the child's eyesight to anyone but a properly trained specialist? Between the optician and the oculist there is the same difference as between the druggist and the doctor. A sensible person when ill does not ask the druggist to prescribe. The druggist who asserts that he can do this better than the doctor proves himself unreliable." True, yet druggists do prescribe and will continue to do so because many of their customers demand it, and so will opticians and optometrists continue to maltreat the eyes for the same reason. But that is no reason why a doctor should advise his patients to seek relief from druggists or optometrists when they have troubles which he is not prepared to treat. If he sends his eye cases to an optometrist, he ought not to complain if the oculist recommends such of his patients as need attention to their internal organs to go to a druggist. In both cases the patient might

get the right glasses or medicine and be told how to use them correctly. Or, in both cases, relief might come in spite of a wrong glass or a wrong drug, for all the organs of the body, including the eye, are wonderfully tolerant and Nature tries hard to rectify mistakes. The great tolerance of human eyes is shown by the fact that most people who have to wear glasses remain comfortable when the frames have gradually become bent so as to tilt spherical lenses until they create an artificial astigmatism, or change the axis of a cylindrical correction five, ten, or fifteen degrees. When a person has been suffering from eyestrain an incomplete relief often gives a grateful sense of comfort, so a wrong glass may relieve the symptoms for a time.

Often it is the desire to save the doctor's fee that impels the patient to consult the druggist or the optometrist. Does he succeed? This is questionable. Proof is lacking, but it seems to be the general impression among eye doctors that the following statement is very nearly correct: " 'Come to me and save the oculist's fee' advertises the optician who wants to make an illegitimate profit. The person who responds pays more for his glasses in the end than the combined charges of a reputable oculist and the optician."

" 'We use no drops' is the claim of certain 'eyesight specialists' who, though they have not passed a medical examination, often style themselves doctors or oculists. Were they to carry this deception further and sign M. D. to a prescription or use drops, they would be liable to arrest and punishment. Attempting to make a virtue of the necessity of not using drops, they inform you that belladonna, atropine, and other eye drops are harmful. Drops are not always used by oculists, and when they are it is because rest is essential for the strained eye, and because correct glasses cannot be fitted otherwise." If the eye were simply a camera any mechanic accustomed to the handling of lenses could fit eyes perfectly well. But the eye is not simply a camera. It contains a muscle which is apt to assume a state of spasmodic contraction as the result of strain and thus conceal the true refractive condition. Drops are used to relieve this spasmodic contraction by placing this muscle in a state of absolute rest, and are efficient whenever they succeed in doing this. Sometimes they fail, usually because the drug employed was too weak to allay the spasm. The presence or absence of such a spasmodic contraction cannot be determined without a proper examination, but when the oculist believes drops are not needed he does not use them.

Rest glasses are referred to by patients and optometrists as though they were something which could be given and worn to advantage without the necessity of accurate fitting. There is no such thing. "The only correct rest glass is one that has been prescribed after a careful measurement of each eye for its individual defects."

A much smaller proportionate number of sore eyes are to be found in the schools today than was the case a generation ago, and many more of the children wear glasses. This shows the improvement in the children's eyes which has taken place. A very important next step is to be sure that each child has the right glasses. More parents than formerly are willing to have their children wear glasses when needed, and they exhibit an increasing willingness to submit their children to the annoying but necessary methods of a real examination. One way in which the doctor can help along this good work of securing better eyes for the children is to advise his patients to avoid the optometrist and optician, who have only mechanics' skill with lenses, and to consult a medical eye specialist when he has not the training to do the work himself.

DISTRIBUTION OF MALARIA ACCORDING TO CLIMATE AND SEASON

If the distribution of paludism over the surface of the globe be examined it will be found that nearly all countries present more or less considerable malarial areas. But malaria is far from assuming everywhere the same aspect and the same gravity, between the mild paroxysms observed at the present time in Camargue, for example, and the severe paludism of tropical regions there is such a difference that one has the impression of having to do with two distinct diseases. This difference is due to the greater intensity of infections in the tropical zone, perhaps dependent upon the debilitating effect of the climate, but above all upon the strain—the race—of the parasite.

At the present time it is generally admitted that malarial regions can be divided into three categories, namely, tropical, subtropical and temperate regions. The tropical zone is characterized by a distinct prevalence of the Plasmodium precox, India furnishing a typical example. The temperate zone, as the central part of France, is characterized by the almost exclusive presence of the Plasmodium vivax, cases of precox infection observed almost always being imported. Between these two regions exists an intermediary zone—the South of France, Italy, Macedonia, Algeria—where both parasites are encountered in practically the same proportions but at different seasons of the year.

Therefore, climate manifestly influences the type of hematozoon met with and generally speaking it can be said that the Plasmodium precox is the para-

site of warm, the vivax that of temperate climates. The explanation of these facts is as follows:

The temperature may in the first place act directly on the parasite at the time of sex reproduction in the mosquito. Janczo's experiments on this subject have shown that the zygotes do not reach maturity at a temperature of 16° C. or below. These experiments very clearly explain why the precox can only exceptionally develop in France and why in subtropical countries it is in summer only that the initial paroxysm of the first invasion occurs. On the contrary, in tropical regions where the temperature is more even and warmer the time during which the anopheles can develop an infection is much longer.

But these data can only explain the geographical distribution of cases of first invasion and recurrences due to reinfections. Senevet believes that the latter exist but are infinitely less numerous than some observers maintain. He has already combatted this thesis in relation to the pathogenesis of relapses recurring in a short time and W. M. James has also pointed out the small part played by the anopheles in the genesis of relapse. In the regions about the Panama Canal this writer observed that the increase of the epidemic of malaria at the commencement of the malarial season was out of all proportion to the number of anopheles. A certain time is required for the mosquitos to bite, to become infected and thus transmit the disease. The number of cases of malaria increase rapidly directly after the rainy season; likewise in the neighborhood of cities where the number of mosquitos does not markedly increase. Although the rain may make the mosquito enter dwellings, thus increasing the chances of reinfection or infection, the increase in the number of the mosquitos in houses is not sufficient in relation to the number of cases of malaria. Besides, at the end of the wet season, the epidemics drop rapidly at the same time the rain ceases and much more rapidly than the number of mosquitos does. These data show that a close relationship exists between the exposure to cold on the one hand, and the increase of the malarial epidemic on the other, also between the cessation of the exposures and the decline of the epidemic.

These facts as well as the spontaneous arrest of malarial paroxysms at the end of certain seasons, show that the season and climate act on the parasite contained within the body of the host. It is the play of these two actions which explains, according to Senevet, the appearance of the majority of relapses occurring after a considerable lapse of time. In subtropical regions, such as Macedonia, a person is infected during summer by both parasites, the precox and vivax. The latter ceases its manifestations after a few paroxysms, while the precox will continue its cycle. Consequence: relapse follows relapse. Now this same person goes to France about the middle of October with the result that there some paroxysms will develop due to the precox, after which the vivax comes into play. Another subject infected in the same circumstances remains at Salonica, where he continues paroxysms due to the precox until the end of December and only in February will his relapses develop due to the vivax. In the first example the patient has a change of climate; from a subtropical zone he goes to a temperate one, quite unpropitious for proliferation of the precox, but where the cool season, favorable for the vitality of the vivax, comes on much earlier than in Macedonia. His organism has become refractory to the præcox and if it had only been infected by it, the patient would have appeared to be completely cured.

Such data are not pure speculation; they have been noted by many observers, particularly Marchonx who has pointed out paroxysms from Falciparum are rare in France because for reasons yet unknown, malignant tertian appears to be recovered from spontaneously in that country. On the contrary, in the latter case, the patient remains in the same country which from its climate renders his organism propitious for the precox and he must await the end of the season of the year favorable for this parasite, for the paroxysms to stop. The change thus produced will then permit the vivax to commence its cycle.

To sum up, it can be said that there are two parasites, one of summer, the other winter. Warm countries belong to the first, the temperate to the latter, so that their alternation is completely dependent upon seasons. Individual factors can alone cause the paroxysms to occur at other times than the season properly belonging to each.

PROGRESS OF WOMEN IN OCCUPATIONS

A report has recently been issued by the Women's Bureau of the Department of Labor interpreting the census statistics of women in gainful occupations. The chief feature of this report is the great change shown in the type of occupations that women have been adopting for the past ten years. There has been a decided increase in the number of women entering the clerical and allied occupations, in teaching and in nursing, and a marked decline in the number working in the home and in personal service occupations. A great change is shown also in the manufacturing and mechanical industries. Increases of more than ten thousand women were evident in the semiskilled operatives in food, iron and steel, in the clothing industries, and in silk and knitting mills; among forewomen and overseers in manufacturing plants; in electrical supply, shoe, and cigar and tobacco factories; and among laboring women in cotton mills. Women workers in automobile factories

showed an increase of 1,408 per cent., and in the iron and steel industry of 145.4 per cent. Women in public service occupations had increased 60.6 per cent. In several of the occupations included in the study the percentage of increase for women was more than one hundred points higher than that of men in the same occupations. Men cooks, for instance, increased 12,853, and general servants 11,292, while the decline in the number of women in these occupations runs into the hundreds of thousands. Men actors and showmen decreased in this decade more than 1,400, while women increased more than 1,200. Men authors, editors and reporters decreased by several hundreds, and women in the same professions increased by nearly 2,500.

Interesting and important health problems are involved in these occupational changes. It is usually conceded that industrial conditions are "man made," and it will be worth watching to see whether or not women will be willing to accept them. Also, will women's health withstand as well as men's the health hazards present in so many of our modern industries?

NEW YORK TO STUDY INDUSTRIAL HEALTH HAZARDS

The New York State Department of Labor is to make an intensive study of industrial diseases and accidents, based upon data affecting 1,225,000 workers in more than seventy thousand industrial plants. This announcement was made at the annual Safety Congress of the National Safety Council at Buffalo by Dr. Leland E. Cofer, director of the division of public hygiene of the New York State Department of Labor.

The plan is to study conditions as they now are, so that results of improvements may be properly appraised in the future. In doing the work, every opportunity will be embraced of teaching the worker how to work well and economically from a physiological and psychological point of view, as well as how to look after his personal safety and health. Doctor Cofer stated that the industrial hygiene division of New York State examines annually approximately five hundred sets of plans of devices for removing dust and fumes from workrooms. It is proposed to analyze the results of this experience. The intention is also to make a special effort to enlist the interest of the medical profession in the State in recording and reporting, not only specific industrial diseases, but other diseases that may be associated with industry. It is hoped that the cooperation of the organized public health institutions, and of the business and labor interests may also be enlisted in the effort to make this study of significance and value to the problem of industrial and public hygiene.

INTERNATIONAL MENTAL HYGIENE

Plans are being made for an international congress on mental hygiene and related subjects to be held in this country probably in 1925, so the National Committee for Mental Hygiene announces in one of its publications. These plans are under the direction of an organizing committee of which Mr. Clifford W. Beers, secretary of the National Committee, is general secretary. The idea of an international congress and of the founding of an international committee for mental hygiene has been under discussion for some time, but impetus was recently added through a visit made by Mr. Beers to France, Belgium and England, all of which countries have organized national mental hygiene societies. While in Paris, Mr. Beers conferred with delegates from ten countries, and as a result of this meeting general plans for an international congress were agreed upon. The organizing committee which is directing the project then consisted of representatives from twenty-one nations. Delegates from Italy, Spain, Hungary, Denmark and Norway promised to take steps toward founding national bodies in their respective countries so as to take part in the conference. Since the meeting, representatives from Germany, Sweden and Japan have joined the organizing committee and will work toward establishing societies in those countries.

Mr. Beers was elected to honorary membership in the British National Council for Mental Hygiene, he addressed a large public meeting under its auspices in London, and later broadcasted a talk in its interests. He spoke also at the annual banquet of the British Medicopsychological Association and to special groups at Oxford and Cambridge Universities.

AN UNUSUAL TYPHOID CARRIER

The latest report of the Newark Health Department contains the portrait and story of a rather unusual type of male typhoid carrier. Tony Labella is about forty years of age, is unmarried, a Sicilian by birth, and presents the picture of rugged health. He came to the United States more than twenty years ago, but sixteen years ago returned to Italy on a visit. He denied any typhoid history, but stated that when he was fourteen he was ill for two weeks with "stomach trouble and malaria." His condition was discovered in 1921 by the State, and he was considered the cause of an epidemic resulting in seventy-two cases, with three deaths. He was registered by the State, given instructions; and apparently followed them for some time. He consulted a laboratory and apparently was given a favorable report, so he went to work on a farm that marketed milk in Newark. At first he did little of the milking, but later took part in this work, with the result that there was a second epidemic of typhoid of thirty-five cases and six deaths. When the dairy was investigated, following the epidemic, Labella gave a false name. The stool test was taken from dry stool and proved insufficient. All the tests were negative, but a State agent recognized Tony from the previous epidemic, and a fresh stool proved him still a carrier. He was committed to the City Hospital, photographed and finger printed, and ultimately released under agreement of specified occupation. His condition is possibly of twenty-five years' standing. Perhaps he is an intermittent carrier—a single negative test, in his case, means little or nothing. The case illustrates the urgent need for stricter registration laws and vaccination regulations for milkmen and food handlers of all types.

News Items.

Military Order of Foreign Wars Reelection.—At the annual meeting of the Military Order of Foreign Wars, Dr. William Seaman Bainbridge was reelected commander and Dr. James Howard Huddleston, surgeon of the New York Commandery.

Fourth Harvey Lecture.—Dr. David Marine, director of laboratories, Montefiore Hospital, New York City, will deliver the fourth Harvey Society lecture at the New York Academy of Medicine on Saturday evening, January 19, 1924. His subject will be Etiology and Prevention of Simple Goitre..

Alvarenga Prize Announcement.—The College of Physicians of Philadelphia announces that the next award of the Alvarenga Prize will be made on July 15, 1924. This essay must be received by the secretary of the college on or before May 1, 1924. The prize for 1923 was awarded to Dr. Edward P. Heller, Kansas City, Mo., for his essay entitled Treatise on Echinococcus Disease.

World Trip Offered to Physician.—A four year trip around the world on a private yacht is offered to a physician who is interested in medical research. He would be expected to render the few services necessary in a medical capacity on the trip in return for his tour and all expenses, and could have unrestricted writing liberty. Interested physicians are to communicate with Mr. Barry Buchanan, Players' Club, 16 Gramercy Park, New York; telephone, Gramercy 6116.

American Congress on Internal Medicine Sessions.—The eighth annual clinical session of the American Congress on Internal Medicine will be held in St. Louis, Mo., beginning Monday, February 18, 1924. Practitioners and laboratory workers interested in the progress of scientific, clinical and research medicine are invited to take advantage of the opportunities afforded by this session. Address inquiries to the secretary-general, 1002 North Dearborn Street, Chicago.

Endocrine Clinic to Be Conducted.—An endocrine clinic for the study and correction of endocrine disturbances, in children particularly, will be conducted by Dr. A. Weil, endocrinologist; Dr. J. Gutman, internist; Dr. H. R. Litchfield, pediatrist; Dr. E. Giddings, laryngologist; Dr. B. B. Berkowitz, dermatologist; Dr. S. Kleinberg, orthopedist, and Dr. J. Pensak, dentist, on Tuesday and Saturday afternoons from three to six at the Brooklyn Diagnostic Institute Building.

Personal.—Miss Jane Pine has been appointed managing editor of *Hygeia.*

Dr. Louisa Helena Hart, an American physician who is in charge of the Mary Lott Lyles Hospital at Chittur, Madras, India, has been awarded the Kaiser-i-Hind medal of the first class by the British Government.

Dr. Mabel E. Elliott, for four years medical director of the Near East Relief in Turkey, Armenia and Greece, has recently returned to America. For many months Dr. Elliott was in charge of a rescue home for Armenian girls released from imprisonment in Turkish harems. Dr. Elliott is now on a speaking tour for the Near East Relief.

International Clinic of Plastic Surgery.—St. Andrew's Hospital, London, England, will be enlarged for the teaching and practice of plastic surgery. It is estimated that about $120,000 will be required to carry on this work. The staff includes the names of H. D. Gillies and T. Pomfret Kilner, of Great Britain; J. Eastman Sheehan, of New York; Ferris N. Smith, of Grand Rapids, Mich., and Professor Lemaitre, of France.

American Psychoanalytical Round Table.—A round table of the American Psychoanalytical Association was held in the Fraternities Club Building, New York, on Friday, December 28th. Members and guests from various parts of the country took part in the discussion of the subject of the evening, the development of the concept ego, the part the ego plays in the individual and social adaptations of the human being, and some of the problems the ego presents in psychopathology.

Post-Graduate Medical School and Hospital Lecture Schedules.—The New York Post-Graduate Medical School and Hospital announces the lecture schedule for the month of February: February 1st, recent advances in diagnosis and treatment of diseases of the heart, by Dr. Robert H. Halsey, February 8th, the symptoms and treatment of injuries to skull and vertebræ, by Dr. Charles A. Elsberg. February 15th, laboratory aids in the diagnosis and treatment of syphilis, by Dr. Ward J. MacNeal, and February 29th, cleft palate, by Dr. Harold S. Vaughan.

Larger Journal of Röntgenology.—*The American Journal of Röntgenology and Radium Therapy,* the official organ of the American Röntgen Ray Society and the American Radium Society, will appear in enlarged form in 1924, the increased pages being given to additional illustrations, abstracts and more original articles. Dr. A. C. Christie, formerly Colonel in charge of röntgenology in the United States Army during the war, will be the editor. Dr. James T. Case, Dr. H. K. Pancoast and Dr. W. Duane will be the associate editors with a large collaborating staff of the leading röntgenologists.

Rockefeller Gifts for Medical Research.—Carrying out pledges previously made, $1,000,000 has been appropriated to the medical school of the University of Chicago, $1,000,000 to the medical school of the University of Toronto, and $225,000 to the medical school of the University of Iowa. In addition, $500,000 has been appropriated for endowment of the medical school of the University of Alberta, Canada.

A gift of £50,000 has been made to Edinburgh University by the trustees of New York for fuller equipment of the university on its medical side. The Edinburgh Medical School is one of the most famous in the world. The gift will be used for the erection of chemical and research laboratories in association with the Royal Infirmary and also for completion of the endowment of a professorship of surgery on a full time basis.

The Dean of the Faculty of the Welsh National School of Medicine, at Cardiff, announces that the trustees of the Rockefeller Foundation had notified him of their intention to make a donation of £14,000 to the institution to be devoted to the building of new laboratories and clinical facilities.

Foreign Correspondence.

LONDON LETTER.

(*From our own correspondent.*)

London, *November 20, 1923.*

MEDICAL TREATMENT UNDER THE NATIONAL INSURANCE ACT.

What has been known as the panel crisis, that is, the dispute between medical men acting as practitioners under the British National Insurance Act and the Ministry of Health and the Associated Societies, has passed. At one time it seemed as if this form of medical practice was about to end. The disagreement was concerning money and the Associated Societies. The situation was somewhat complicated, largely owing to the fact that these societies appeared to be disposed or even anxious to dominate and dictate to the panel practitioners. The settlement is in the nature of a compromise between these practitioners and the Ministry of Health while the societies assert that the doctors have won and protest against the decision of the conference to accept the terms offered by the Ministry. However, a special court of inquiry is to be set up by the Minister of Health as soon as possible, which will be instructed to report on the capitation fee to be paid. Whether this decision is satisfactory to the medical men concerned remains to be proved. The following are the proposals authorized by the Minister of Health and accepted by the Insurance Medical Practitioners:

1. The Minister accepts the following formula: "Medical benefit is, with sickness, disablement, and maternity benefits, one of the primary benefits under the National health insurance acts. Other benefits are additional and contingent upon the foregoing being first provided. The question of what is the proper amount of remuneration to be paid to the doctors, is one to be determined on its merits by the Government after due inquiry and after negotiation with the representatives of the profession.

2. An impartial Royal Commission will be appointed to investigate and report on the whole system established under the national health insurance acts, including medical benefit and the remuneration of the practitioners.

3. Provided the insurance acts committeee nominate an actuary of suitable standing, the Government actuary is prepared to meet him in professional consultation with a view to satisfying him that all relevant considerations have been taken into account in arriving at his conclusion as to the maximum which can be charged to insurance funds from January 1st.

4. As regards England and Wales, during the next year a sum of £250,000 will be provided for the mileage fund and to meet other points raised with regard to the rural practitioners by the deputation which recently saw representatives of the Ministry of Health on the subject; the Scottish mileage to be discussed as heretofore with the Scottish Board of Health.

5. As regards the arrangements for remuneration from January 1st, the Minister authorizes the following alternative offers: a, A capitation fee of eight shillings and sixpence to be paid for five years from January 1st, provided that if the Royal Commission referred to above during the currency of that period suggests any material alteration of conditions of service, the profession shall be free to reopen the question of remuneration; or b, a special court of inquiry will be set up by the Minister as soon as possible and instructed to report on the capitation fee to be paid from January 1st. The contract will be made on the basis of the fee recommended by the court of inquiry, the Government undertaking to go to Parliament for the necessary legislative sanction, and the profession undertaking to accept the recommendation. The court of inquiry will be asked to report as soon as possible, hearing any evidence tendered on behalf of the Ministry, the profession, the approved societies or other interested parties.

DEATH OF A GREAT SURGEON AND SANITARIAN.

Mr. Thomas Pridgin Teale, F.R.S., F.R.C.S., who died on November 13th, was one of the surgeons who maintained or rather enhanced the great reputation of the Leeds School of Medicine. To the general public he was known chiefly for his work in domestic sanitation, and especially for the improvement of house fires. He was born in 1831 and was the eldest son of Thomas Pridgin Teale, a surgeon in Leeds, who described and employed a method of amputation which is still associated with his name. He was educated at Oxford University where he was fourth in mathematics in 1852. He then became a medical student at King's College, London. After taking the diploma of M.R.C.S. he spent six months in visiting the medical schools of Europe. He obtained the degree of M.B. Oxford in 1856 and settled in Leeds. He then took the F.R.C.S., England, and lived to be the Senior Fellow of the Royal College of Surgeons. He became lecturer on surgery in the Leeds Medical School. In 1864 he succeeded his father as surgeon to the Leeds Infirmary. In 1876 he was nominated a Crown Member of the General Medical Council, and in 1888 he was elected F.R.S. In 1904 he received the compliment of an honorary D.S.C. from Leeds University.

Teale was primarily a teacher and a surgeon; secondarily, he was an apostle of domestic sanitation at a time when the public gave little thought to drains, ventilation or atmosphere. As a surgeon he collaborated with Sir Clifford Allbutt, then a physician on the staff of the Leeds General Infirmary, to revolutionize the treatment of the condition known as scrofulous neck, when as yet the infective nature of tubercle was unknown. It was formerly the practice to treat enlarged glands of the neck in children by poulticing, painting with iodine, or using other local remedies, with the result that matter collected and ugly scars were left. Clifford Allbutt advocated and Teale practised the operative removal of these glands as soon as it was obvious that simpler means were failing to give relief. The idea was new, but it soon met with general approval, for the surgical scar proved to be less unsightly than that produced by natural processes. He invented a means of extracting soft cataract and invented an operation for the relief of symblepharon. He was a skillful surgeon and in advance of his time. Teale was a great sanitarian and a pioneer of many of the methods by which British sanitation has become world famed.

LATIN AMERICA LETTER

(*From our own correspondent*)

BALBOA HEIGHTS, C. Z., *December 21, 1923.*

MEMORIAL TO THE FRENCH CANAL EMPLOYEES WHO DIED AT PANAMA.

During the time that the French Company was attempting the digging of a canal across the Isthmus of Panama, 1881-1889, the mortality from yellow fever, malaria and other diseases was terrific. The total number of deaths is placed at 22,189 and the annual death rate at 240 a thousand of population. These figures refer to the employees of the French Company. It seemed to the French citizens resident in Panama, and their friends in the Republic and the Canal Zone, that some memorial should be erected to these men who gave their lives in attempting the gigantic enterprise of the construction of an interoceanic canal, an effort which would have been crowned with success had the sanitary knowledge of man equalled his engineering knowledge at the time. As an example of the extent to which this ignorance hampered the project, a story is told of the Sister Directress of the really good, but unscreened hospital, which the French built. This estimable lady was very fond of flowers and at her solicitation members of her order in many parts of the world sent her various seeds and bulbs. These she planted, but soon discovered that unless they were to be destroyed by ants, some means of protecting them must be devised. The good Sister accomplished this by having constructed concrete shallow dishes of appropriate size and in these she placed water and the potted plants. Here was an ideal breeding place for the Aëdes stegomyia, the vector of yellow fever, and since the hospital was unscreened and was constantly treating the disease, if a nonimmune patient entered the hospital he was pretty sure to contract *fiebre amarilla* no matter for what cause he was admitted. While the accuracy of this story cannot be vouched for, it shows the way in which yellow fever marched unobstructed up and down the Isthmus until Gorgas and his coworkers came armed with the immortal discoveries of Reed.

Largely through the efforts of M. de Simonen, formerly the French *Charge d'Affaires*, the cooperation of the Panamanian government was secured, the old Chiriqui prison was largely razed and the plot of ground formerly known as Las Bovedas was transformed into the Plaza Frances. This was the site of the fortification which was erected when the city of Panama was transferred from the place where it was destroyed by the pirate Morgan. It is related that it cost so much to construct that the King of Spain thought he should be able to see it from the windows of his palace. In the old casemates of this fort were placed a series of plaques on which is recorded the essential history of the canal project from its inception in the sixteenth century to the present time and in front of a beautiful colonnade, statues were raised to certain of the more prominent French engineers. This forms a background for a pyramid surmounted by the gallic cock, a memorial to those gallant sons of France who were the pioneers of the work completed by the United States.

On December 2, 1923, the French Cruiser *Jeanne d'Arc*, with the Special French Envoy Le Comte de Bourdoncle de Saint Salvy aboard, arrived at Cristobal-Colon, and on the fourth he dedicated the memorial in the presence of the officials of the Republic of Panama and the Canal Zone and a large gathering of the pueblo. The ceremonies opened with the open air mass at which Chaplain Le Petit of the *Jeanne d'Arc* officiated using the vestments and altar service of the golden altar of the chapel erected in Paris on the site where Louis XVI and Marie Antoinette are buried. Following the religious ceremonies President Porras and Comte de Saint Salvy made addresses.

The entire incident was made a great fiesta by the city of Panama and there were official receptions, official dinners and balls, while for the *gente* there was a holiday with firecrackers and many forms of amusement.

RESEARCH WORKER VISITS THE ISTHMUS.

Dr. Patrick A. Buxton, of the London School of Tropical Medicine, arrived at Cristobal-Colon on December 1, 1923, on the *Athenic*, and sailed the following day for Samoa via New Zealand. He will inaugurate preventive measures against filariasis in Samoa and will be assisted by Mr. G. W. Hopkins, an entomologist, who accompanied him. Dr. Buxton was met at Quarantine by Colonel H. C. Fisher, M. C., U. S. A., the chief health officer of the Canal Zone, and by Dr. D. P. Curry, the assistant chief health officer. The party inspected the antimalaria work which is being carried on by the Health Department of the Panama Canal and visited various points of sanitary interest.

While Dr. Buxton's expedition is financed from the Milner Research Fund, which is intended to be used for the promotion of scientific research and not to subsidize or replace local efforts in sanitation, it will in this instance be used to stimulate effort to control disease conditions in the Samoa group which are now being administered by New Zealand under a mandate from Germany. Health conditions are reported to be very bad and are causing considerable anxiety on the part of the New Zealand government. The 1918 influenza epidemic killed almost a third of the population, dysentery is epidemic and tuberculosis is said to be spreading; filariasis and ankylostomiasis are sufficiently prevalent to complicate the local labor market. The mission will study these questions and will remain for two years in Samoa for the purpose. The personnel of the party will probably be considerably augmented by undergraduates from the local medical schools.

IDENTIFICATION OF CANAL ZONE TOP MINNOWS.

The Health Department of the Panama Canal has been conducting in the office of Dr. J. L. Byrd, City Health Officer of Cristobal-Colon, experiments in the propagation of mosquito larvæ destroying top minnows. Eight of these were sent to Dr. Barton A. Bean, Assistant Curator of Fishes, United States National Museum, and he has identified them as Poecilia sphenops, Cuvier and Valenciennes. These are well recognized devourers of mosquito larvæ and are one of the most variable and abundant of its family which ranges from Mexico to the Panama Canal Zone. Dr. Buxton took a liberal supply of this species with him for transplantation in Samoa.

Book Reviews

RADIOLOGY

Chronic Intestinal Stasis (Lane's Disease). A Radiological Study by ALFRED C. JORDAN, M.D. (Camb.), M.R.C.P. (Lond.) London: Henry Frowde and Hodder and Stoughton, 1923.

There is romance in medicine which appeals to the medical man and also to the layman. Medicine, while it has lost, to a very large extent, its mystery, has gained in romance to the layman. No branch of medicine typifies this romance more than radiology, and together with medical research these have filled the gap left by the dispelling or waning of the mystery. As far as medical research is concerned, doctors themselves admit freely that they are endeavoring to peer through a maze of which they are but on the outskirts. The greatest feats of exploration in this comparatively undiscovered field have been done in tropical regions and especially in Darkest Africa. The fastnesses of certain insect borne devastating diseases have been penetrated and the maladies themselves robbed of some of their terrors. Not all the triumphs of modern medicine, however, have been won in tropical lands; there have been wonder and romance in medicine in civilized countries. Radiology is the most striking example of a discovery at home, which has in reality opened up new fields and has advanced immensely the progress of medical science and the treatment of disease. By its aid diagnosis in some directions has been revolutionized and medical men may now gaze into the inmost recesses of the human body and regard them as the battleground of minute organisms, some of which are warring against and some defending the life of unconscious man.

Dr. Jordan in this book deals with radiology as applied to the interpretation of the intestinal problem and shows how successful the method has been in elucidating many of its obscure features. Indeed, it may be said without straining a point that lacking the aid of radiology our knowledge of intestinal conditions would be imperfect, almost elementary, instead of wide and accurate as is the case today. Dr. Jordan has largely devoted his inborn skill in this science, trained by experience, and his time on the clearing up of many of the moot points of intestinal stasis and has here recorded the results of the knowledge thus accumulated. Sir Arbuthnot Lane was the first to draw attention to chronic intestinal stasis and its probable and possible consequences and in a foreword to the book points out its great value to the medical profession, since the x ray shows by its pictures intestinal facts far more graphically than any written exposition. The book abounds in such pictured expositions. There is not space to make a detailed review of the work and therefore attention will be concentrated on certain of its most arresting features. Chapter IV should be studied closely as it discusses the method of examination employed by the author, the composition of the opaque meal used by him and his mode of administering it. He defends his methods against his critics and further states that his long experience has led him to the conclusion that the whole alimentary tract should be investigated in each case of chronic intestinal stasis.

In other chapters Lane's kinks and all parts of the intestines involved in and affected by chronic intestinal stasis are described with meticulous precision by words and pictures. One chapter is devoted to a consideration of colitis of the large intestine, a frequent accompaniment of stasis, while the succeeding chapter shows how far x ray investigations of cases of stasis determine the etiology and pathology of diverticulitis in the large intestine. It may be said that all the observations of the author have convinced him that diverticulitis is a consequence of colitis. The duodenum and duodenal ulcer in stasis are given a chapter for their description distinguished by some remarkable pictures. Gastric ulcer is dealt with in a like manner in the next chapter and therein Dr. Jordan delivers himself of a decided expression of opinion with regard to the relationship between chronic gastric ulcers and cancer.

It is his opinion that a good many chronic ulcers become cancerous. This is a vexed question and one around which much controversy has raged. According to the author radiography proves absolutely that many gastric ulcers become cancerous and radiographs are shown in support of the statement. A very intriguing chapter is that which is concerned with glycosuria in chronic intestinal stasis and cases are quoted and pictures of them shown taken from a paper by Dr. N. Mutch which appeared in *Practitioner,* May, 1915, which go to prove that there is a definite relationship between glycosuria and chronic intestinal stasis.

Several pages of the book discuss treatment of stasis including the operative procedures introduced by Sir Arbuthnot Lane. A chapter is given over to the relation between stasis and the prevention of cancer. Many authorities hold that civilization and especially civilized diet tend to produce or arouse cancer into activity and that consequently in the prevention of cancer careful diet and mode of living generally are important factors. Dr. Jordan takes the view that, in the first instance, chronic intestinal stasis by poisoning the body in every tissue and organ so lowers its resisting powers that it becomes strongly susceptible to the occurrence and development of malignant processes. Moreover, it is universally allowed that long continued irritation may initiate cancerous change in the predisposed.

Chronic catarrh of the large intestine is an extremely frequent condition in stasis and when long continued, although there may be no definite ulceration, there is always a certain amount of erosion of the mucous membrane. In fact, the conditions are such as to favor all changes of a malignant nature. Marked lowered resistance brought about by prolonged stasis, and advanced chronic irritation of the large intestine induced by a long standing colitis the effect of chronic stasis. Diverticulitis, too, may lead to cancer, and Dr. Jordan is of the opinion that there is always danger of cancer arising in the large intestine where bands and sharp angulations have formed and this danger is enhanced by peristaltic efforts to overcome the obstruction caused by bands and kinks. The author shows that when stasis has lasted for a long period that it produces numerous

means of chronic irritation in the large intestine favorable to the production of malignant disease. And lastly, as said before, Dr. Jordan supports the view that gastric ulcer may appear on the site of a chronic ulcer, that is to say, as far as can be judged by radiological examination.

According to the author, cancer may be brought about in other regions of the body by chronic irritation which in turn may be caused by long continued stasis. If these hypotheses be correct, and the evidence in support of them, in whole or part, appears to be increasing, then the prevention of cancer largely lies in paying close attention to the laws of health and especially so with regard to diet. At the end of the chapter on cancer Dr. Jordan has outlined methods of treatment, mainly by the means of suitable diet and by avoiding constipation, which should tend to prevent the occurrence of cancer.

The book is fascinating in a high degree and describes the romance of radiology as applied to the problem of intestinal stasis, in a way which simplifies and clarifies the subject greatly. Of course, there are many who think that chronic intestinal stasis and its effects have been exaggerated. However, there is no evading the fact that diseases of the alimentary tract are more in evidence than ever before and that ill health affecting perhaps one or other of all the organs of the body supervenes when the gastrointestinal machinery is not working smoothly. Indeed, pronounced stress throughout the book is laid on the point that in disease there is an essential unity, if one organ is in distress, the entire system is more or less involved. The part cannot suffer without prejudicially affecting the whole. Dr. Jordan has done a great service by demonstrating by pen and picture in a masterly fashion the mechanical changes produced by stasis as well as its bad influence on the general health. The volume proves up to the hilt the diagnostic value of radiology set forth by one who knows his subject from A to Z. The volume is a work of art in addition to being full of information. The printing is excellent and the x ray pictures which explain the text on almost every page are reproduced amazingly well.

OPHTHALMOLOGY

Traité d'ophthalmologie. Par le Dr. Poulard. Paris: Masson et Cie, Editeurs, 1923.

This is a work of somewhat uneven merit, the surgery of ophthalmology being given by far greater prominence than that bestowed upon its medical side. The entire work bears the unmistakable imprint of the author's personal experience, and insofar sustains his claim of its purely clinical character. The book is purged of all that is not of immediate value to the practising eye man, such as burdensome historical data, supposititious theorizing and controversial points that encumber and often pad unnecessarily an otherwise useful textbook. Of pathology just enough is entered into that will serve to elucidate the clinical picture. The American reader will be especially favorably impressed by the treatment of the subject of syphilis in its wide ramifications as it affects all the structures of the eye. Thus syphilis of the conjunctiva that is usually passed over, or barely mentioned in many a textbook, is given twelve pages out of the total of 153 devoted to the subject of conjunctival affections. Of the other subjects that are treated most thoroughly we may mention especially that of traumatism of the globe and orbit, glaucoma, and neurology of the eye. The surgery of the lids, to which especial impetus was given by the late war, is given the prominence that it justly deserves.

We were looking in vain, both in the index (which, by the way, is far from complete), and in the subject matter of the book, for even a mention of amaurotic family idiocy, a condition which, though rare, is nevertheless of sufficient importance to be alluded to in a treatise on ophthalmology. In the etiology of iritis the author fails to give due weight to the subject of focal infection. The American ophthalmologists were the first, we believe, to call attention to this subject; and while it may still be considered by some as *sub judice,* enough clinical material has accumulated by now to lay a firm scientific foundation for focal infection as an undoubted etiological factor in iritis.

The French reading ophthalmologist will find this work refreshing in its clarity of style and for the seemingly secure hold the author has on his subject.

CONSTIPATION

Habitual Constipation. By Ismar Boas, M.D. Translated by Thomas L. Stedman, M.D. New York: Funk & Wagnalls Co., 1923.

The present book on habitual constipation, coming as it does from the most eminent specialist on gastroenterology in Europe, deserves minute attention from every medical practitioner. Each page contains something useful for his future use.

Regarding the relation between constipation and neurasthenia, Boas is of the opinion that the latter condition is produced by the former. He expresses himself as follows: "While psychic excitement may exert a powerful influence on bowel activity, not only in a retarding but also in an accelerating sense (anxiety diarrhea), it would be going too far to say that every subject of constipation was first a neurasthenic or should be so treated. The reverse is often the case; the subject of chronic constipation who lives, as it were, with his bowel troubles and who sees no improvement in spite of many drugs and modes of treatment, falls gradually into a state of nervous unrest, becomes unduly concerned about his bowels, eats and sleeps badly, and in consequence gradually becomes a neurasthenic or hypochondriac. Among neurasthenics, on the other hand, habitual constipation may be nothing more than one of the many symptoms of which they are wont to complain; and even if the constipation is remedied, the neurasthenia is by no means cured but merely passes into another phase.

Boas exhorts the patient suffering from habitual constipation to follow the twelve golden rules: "1. Accustom yourself to go to the toilet every day in the early morning. 2. Do not protract your visit to the toilet beyond ten minutes; a longer stay is a sign that your bowels are not in good order. 3. Eat your meals at, or as near, the same hour every day as possible and eat them slowly. 4. Imitate the countryman in your choice of diet. Avoid large quantities of meat, fine confections and puddings. Let your diet consist chiefly of rye or whole wheat

bread, fats, fruit, vegetables and salads. 5. Spend at least a half hour or a whole hour every day, in fair weather or foul, in open air exercise. 6. Do not allow yourself or your children to fall into the laxative habit. The longer the abuse of cathartics has continued, the more difficult will be the cure of the constipation. 7. When you are forced to take a cathartic, select the simplest and the least harmful. 8. Reject all laxatives the composition of which is unknown or which are secret remedies. In doubtful cases consult your physician. 9. Listen, if you must, to the recommendations by friends and acquaintances of infallibly effective laxatives but don't act on their advice. 10. If you take an enema, don't distend the rectum with too much fluid. Avoid too cold or too hot injections. Add no irritating substances to the injection fluid. 11. Follow the constipation diet exactly in every detail. Even should it work unsatisfactorily or not at all, you will have gained the advantage that mild laxatives, formerly ineffectual, will now work well. 12. Do not abandon the diet too abruptly. Give it up very gradually and tentatively. When the constipation has lasted for years keep the principles of the constipation diet in mind for all time.

THE UNCONSCIOUS

The Unconscious Mind. By S. Herbert, M.D., M.R.C.S., L.R.C.P. London: A. & C. Black, Ltd. New York: Macmillan Company, 1923.

The subtitle, a psychoanalytical survey, clearly indicates the content. The author has added practically nothing to what has been written about psychoanalysis. In the main the book is a rehash of quotations with an attempt to orient the various schools of analysis. Yet from the point of view of American workers in psychoanalysis, the omission of the works of White, Jelliffe, Kempf, Burrow and others will seem incongruous, especially when careful consideration is given the reactionary works of Rivers and others, although they are fairly well evaluated. There must be some vital reason for the resistance of certain European analysts which is shown toward the work of the group of men in this country who have made contributions to the study of analysis. Perhaps the powers of the son are not relished by the parent.

PHILOSOPHY

Indian Philosophy. By S. Radhakrishnan. Volume I. New York: Macmillan & Co., 1923.

One of the few books on Eastern philosophy that is presented from the point of view of evolution. The material is handled much in the fashion in which Wundt handles his folk psychology. From the earliest Vedic hymns to the schools of Buddhism he traces each step in the evolutionary development of the various philosophical influence in India. True to his word, religion, as far as possible, is kept to one side or even in the background. The conditionings which influenced the changes which were effected are carefully considered and from many angles. Few writers have such a wealth of material so well organized and have the ability to present it as has Radhakrishnan.

In addition to the vast amount of material presented; the manner in which it is done is reminiscent of Frazer or some of the other gifted anthropologists. A certain honesty and fearlessness prevails. Courage on the part of a native is required to see and report regressive tendencies in a philosophy or a religion. This courage finds its reward, for such a man can then select the useful and reject the worthless. The most modern concepts of Eastern and Western philosophies are considered and compared. This comparison is carried out in a most intelligent manner. Of interest is the unconscious hypotheses of some of the Indian concepts of material things such as a highly complex solar system, as well as a fair idea of the atomic and molecular system.

When we consider how important Indian achievements are in our own life, we should find a vital interest in this interesting survey of their development. They are, as the Sanscrit grammar and language, the mother of all our modern languages. They did many things and thought many things which we are prone to neglect and which should be utilized by us today. We should not take a negative attitude and condemn all they have done because, on the whole, the originators of these teachings have regressed so markedly nor should we be led astray by the certain vital truths contained and start cults and fads based on these teachings. Many honest fakirs have done this, some to the extent of founding institutes of healing on the few thin threads they felt they had discovered. We must gather the products of the past to live more fully. But we must also remember Bergson's best sentence, "He who lives so much in the past that he cannot live in the future is dead."

HOSPITAL LIBRARY

The Hospital Library. By Edith Kathleen Jones. Chicago: American Library Association, 1923.

The subtitle of this book goes on to say that the work comprises articles on hospital library service, organization, administration and book selection, together with lists of books and periodicals suitable for hospitals. This last feature is by far the most valuable part of the book. The lists include fiction suitable for patients to read, and this is subdivided into old favorites and new, love stories and romances, humorous books, books that men like, including stories of adventure and daring, romances of trade and business, sports, animal stories, sea yarns, and detective and mystery stories; a selected list of books on general subjects, including handicrafts, followed by a list of first and second choice periodicals on the same general subjects. Then comes a list of books for little children, for older boys and older girls; a list of selected books for nurses, including biology, personal and community hygiene, chemistry and physics, dietetics and diet in disease, household and hospital economics, nursing, materia medica, therapeutics, pharmacology, drugs and solutions, massage and hydrotherapy, pathology, surgery, medicine, pediatrics and infant feeding, gynecology and obstetrics, neurology and psychiatry, general reference, and periodicals for nurses. The list for nurses was compiled by Mary N. Marvin, R. N. The final list is a bibliography of hospital library social service. There is a chapter on books suitable for reading

aloud to convalescents.

Medicoliterary Notes.

The announcement of the *Survey Graphic* for the coming year gives promise of a number of interesting articles on medical and psychological subjects. Among physicians who will contribute papers are Dr. Adolf Meyer, of the Phipps Psychiatric Clinic at Johns Hopkins; Dr. Ira S. Wile, of Mt. Sinai Hospital; Dr. Bernard Glueck, director of the Bureau of Children's Guidance in New York; Dr. Richard C. Cabot, professor of social ethics at Harvard, and Dr. Haven Emerson, of New York.

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Dr. Charles V. Craster, health officer of Newark, writes for the November number of the *American Journal of Public Health* a full and interesting discussion of organic heart disease—its distribution and menace.

* * *

The Story of the Siren, by E. M. Foster, in the *Atlantic* for October, is well worth reading, both for its poetical and imaginative qualities, and for its psychological interest. In the same number Clifford H. Farr, professor of botany at the University of Iowa, has a paper on the Mind of the Molecule which gives interesting food for thought.

* * *

Grace Abbott, chief of the United States Children's Bureau, stated before a sectional meeting of the Home Economics Association in Chicago, that child labor in the United States is increasing. One million children between the ages of ten and sixteen years were employed in January, 1920, she said. A decrease was registered in 1921, but reports from twenty cities indicate marked increases for 1922, some as high as one hundred per cent., a general increase of fifty-seven per cent. being shown.—*Nation's Health.*

* * *

In a recent issue of *La Revue Mondiale,* Dr. M. A. Legrand discusses what he considers the extraordinary knowledge of medicine and surgery shown in the works of Homer. He is fully convinced that Homer was a real person and declares that only a trained and experienced practitioner could state so definitely in the descriptions of battles and combats the location of wounds, the course followed by piercing weapons, or the results of sword strokes.

* * *

An important recent publication dealing with the history of medicine is *Nosography in Modern Internal Medicine,* by Dr. Knud Faber, professor of internal medicine at the University of Copenhagen. The book takes up and discusses in full the various phases through which nosography has passed and the changing judgments on its value, giving a clear idea of the importance of the method for scientific progress.

* * *

Newspapers and journals would do well to follow the policy of the New York *World,* which publishes a circular distributed to all would be advertisers along medical lines stating the limitations imposed upon such advertisements. This circular states that the *World* does not accept advertisements which, in its opinion, are misleading, repulsive, or against public policy. These include advertisements of preparations, devices, or services that claim to work miracles, testimonials which are obscene or disgusting in text or illustrations, which might prevent or delay securing the needed attention of a physician or surgeon, or which propose surgical operations by any one other than a legally qualified practitioner.

* * *

A two year course in psychiatric social work is being offered by Simmons College, Boston. The first year covers work in behavior, psychopathology, and mental hygiene. The second year will be devoted largely to practical work, accompanied by lectures on the clinical side of psychiatry, with presentation of cases. The Boston Psychopathic Hospital and the Judge Baker Foundation will be used by the students for their field work.

* * *

What improvements in the sanitary quality of water supplies can do in lowering typhoid death rates is shown in New York City's typhoid fever statistics. For twenty-two years prior to 1906, the average death rate from this disease was twenty-two to one hundred thousand of population. Since 1906, there has been a uniform decrease, until in 1922, when it was three to one hundred thousand. This amounts to a saving of two thousand lives a year from typhoid fever alone.

* * *

In the course of naval operations in the Napoleonic wars, military surgeons discovered that the spread of sore throat among the men could be stopped by boiling mess gear.—*Monthly Bulletin, Boston Health Department.*

* * *

A recent report on industrial hygiene states that there are more than one hundred occupations which are more dangerous than coal mining. Among these are window cleaning, the operating of farm machinery, certain phases of carpentry, quarrying, and excavating.

* * *

The International Pasteur Centenary Exhibition at Strasburg is described in an article in the September number of the *World's Health.* From the descriptions and criticisms by the writer of various special exhibits, much of profit could be gained in the planning of health exhibits in this country. Fifteen countries besides France and her colonies had important special exhibits. "If one has any criticism to make," to quote from the article, "on stepping out of the last pavilion with aching eyes and brain dazed with figures, it is regret that the science of exhibiting has not kept pace with the advance of hygiene, and a feeling that there is still room for improvement in the attractive presentation of facts. . . . We are so eager to inform the public that we forget first to awaken their desire for information. We tell them that health means happiness, and then proceed to make them bored and miserable by presenting to them endless statistics which leave them with a confused idea of the awfulness of disease but very little conception of how to prevent it. Constructive hygiene exhibitions are what the public needs, and with the material we possess, there is no reason why we should not supply them."

Practical Therapeutics

FURTHER OBSERVATIONS WITH THE NEW NONNARCOTIC HYPNOANALGESIC

By M. A. Burns, M. D.,
Philadelphia,
Associate in Neurology, Jefferson Medical College.

That the symptomatology of diseases of the nervous system has attained a broader scope than the therapy is generally recognized, and therefore the value is enhanced of every drug that is demonstrated as a scientific addition to our resources. Nor is there another field in the practice of medicine where a drug requires such close scrutiny in affections so often characterized by chronicity, prolonged pain, and the various psychoses, as that of neurology.

In February, 1922 (1), I had the opportunity of reading a paper before the Philadelphia Neurological Society, embodying my preliminary observations with those of a number of other physicians, on the new nonnarcotic, hypnoanalgesic drug, allonal, representing a chemical combination of a new hypnotic, allyl-isopropyl-barbituric acid, and the analgesic element, phenyl - dimethyl - dimethylamino - pyrazolon (amidopyrin). Actuated by the promise of therapeutic value in the field of neurology which first experiences with allonal indicated, among them the results obtained during the spring and summer of 1921, by Dercum, reported by Gilpin (2), in a case of a malignant growth involving the cauda equina, associated with considerable pain which had resisted even morphine, I presented some observations on it before the society.

In addition to my own results in a series of cases furnishing rather severe tests, such as hemiplegia with insomnia, tabetic pains, cerebrospinal lues, multiple neuritis, rheumatoid arthritis, and melancholia with drug addiction, reports were included of cases treated by Wright, Stieglitz, Messmer, and Hornberger, likewise representing a great variety of affections, not all limited to the neurological field, but all with an array of symptoms in which pain and insomnia were the predominating factors.

Since these observations of about two years ago, reports (3, 4, 5, 6, 7) from other fields of medical practice have corroborated the conclusions which I drew at that time, as to the selective therapeutic value of the new drug; there have been important contributions, too, as to its value in the dental field, for allaying the fear of the dental chair on the part of very sensitive patients and for the relief of postoperative pain (8, 9).

In referring to these contributions, two factors are pertinent: first, that in each case the reports come from specialists whose investigations were made in selected cases of great severity, and secondly, that the outstanding indications were pain and insomnia—a syndrome which hitherto had been inextricably blended with the employment of opium and its derivatives.

In the meantime, it devolved upon me, as the first contributor on the subject, not only to take inventory of my additional observations, but to investigate the dose of the drug, untoward affects, if any, and, if possible, to look for a still greater scope of usefulness, especially the obvious one of drug addiction; and that not only, as to whether allonal in selected cases could replace morphine, but also, whether it could do so in the treatment of morphine addiction. In such treatment the omnipresent desideratum for neurologists was again uppermost, namely, to have a means for the permanent restoration of nervous equilibrium, by the lack of which we have been sadly handicapped so far. Even without further observation on my part, the answer to this appears to be forthcoming, when we consult one of the latest contributions on the subject, by Kuh and Gerty (3), of the Cook County Psychopathic Hospital of Chicago, and especially their results in the following types and number of cases, viz.: drug addiction, three; alcoholism, six; dementia precox, four; arteriosclerosis with and without dementia, five; neurasthenia, one; toxic psychosis, one; general paresis, five; taboparesis, three; cerebrospinal lues, two; polyarthritis and endocarditis, one; tic douloureux, one; neuralgia of the fifth nerve, one.

The therapeutic position of allonal thus having been established, the obviously logical field for immediate exploration was that of drug addiction, as indeed suggested by the case of melancholia with drug addiction, reported in my former paper. I may mention here that that patient continues to be perfectly well, has not taken any medicine whatever during the past eighteen months, is a perfectly healthy woman, and during that period has continuously held a responsible position in a large department store. This patient's daily consumption of four grains morphine sulphate had been cut out entirely and successfully at one stroke, by the substitution of thirteen grains allonal a day for several weeks and then by gradual reduction down to nothing. The results obtained in this case led to a wide use of the drug in the treatment of drug addicts in the Eastern Penitentiary in this city, and I am indebted to Dr. H. Ungerleider, resident physician in that institution, for the following report from his records:

"Seventy-two cases of drug addiction were treated with allonal in the Eastern Penitentiary State Hospital in the spring of this year. The treatment followed was one of rigorous substitution, all morphine, heroin, or cocaine being entirely cut off at once and allonal substituted. The patients were sustained by stimulation, the stimulants used being strychnine and plenty of highly nourishing food, milk, eggs, and all the sugar they asked for; the patients were allowed all the sweet foods they desired; allonal was given to allay insomnia and hyperexcitability, one tablet at a time, and no more than three tablets were given to any one patient. There were no complications. The patients all recovered and have been without any drug, either narcotics or allonal, since May, 1923."

Without the slightest suggestion of any claim that allonal has, as yet, been found a specific, I may say that it has, at least, proved a very useful drug for this purpose. The clinical tests to which it has been put in these cases were obviously more severe, in that they represented patients of a criminally in-

clined and institutional character, in whom the mental attitude and environments were hardly conducive to any psychological susceptibility to treatment.

Allonal, like many other drugs, will produce untoward, but not harmful symptoms, such as vertigo, if injudiciously administered, as, for instance, in overdose, in a dose too large for ambulatory purposes, and in those cases of idiosyncrasy always found, of which I, however, have not yet encountered any.

It is obvious that an hypnotic dose of any drug necessitates the recumbent posture. The therapeutic indications and the potentiality of a drug once having been established, the dose in a given case is entirely a matter of discretion, especially with a drug like this new one, the indications for which fluctuate from requiring an ambulatory sedative to demanding the induction of prolonged sleep, without narcosis, for the alleviation of pain. No one would administer a hypodermic dose of morphine for ambulatory purposes. This must be considered even in the case of a drug like allonal, although its effect is more under the control of the physician, and which does admit of administration by mouth for ambulatory purposes. Furthermore, in the case of this drug, the sensory and motor nerves, or both, are necessarily involved according to the dose.

During the past two years I have continued my observations on many of the patients to whom I had been giving allonal; no growth of tolerance for the drug involving an increase of dose in the treatment of chronic cases has been observed, indeed the results have been all in the other direction, as in the case of a woman, aged sixty-two years, who has been suffering from paralysis agitans for the past eight years. In addition to her marked rigidity and violent tremors, she suffered considerably from pain in her arms and legs; I had given her hyoscine and parathyroid for a long period, without results; her nights were terrible, on many occasions I was obliged to give her a hypodermic injection of morphine sulphate one quarter grain, sometimes this relieved her for four or five hours, but on many occasions the relief was of very short duration. About two years ago, I began giving her five grains allonal at bed time; she slept for five hours the first night and awoke with the same severe pain; finally I gave her ten grains at bed time, and she slept the whole night through, from eight to ten hours; her mornings after this dose were comfortable; although she was drowsy, she could be got out of bed and while her tremors and rigidity were not affected during her wakeful hours, yet she had comfortable nights. I gradually reduced the dose until now five grains produce excellent results. I feel this is a most unusual case, and this patient, who suffered continuously from severe pains and sleepless nights, is now comfortable except for her tremors and rigidity. Up to the present time, she has not suffered from any untoward affects as far as I can ascertain.

I now use allonal as a routine method of treatment for tabetic pains, and in cases of agitated depression I have obtained excellent results with two and two thirds grains after each meal and five grains at bed time during the agitated stage; up to the present time I have not had any difficulty in withdrawing the drug.

Some of my colleagues have kindly communicated to me for inclusion in this paper the results of their observations with the new drug:

Dr. F. X. Dercum tells me that "allonal undoubtedly controls neuralgia and other pains in a large number of cases, and that it is a remedy which is unassociated with any harmful effects."

Dr. J. Allen Jackson writes me that "since the publication of your paper on allonal I began the use of the drug in the Danville State Hospital, and I have been very favorably impressed with the results obtained. There is no question but that it is of decided value as a hypnotic and sedative in various mental disorders."

Dr. Charles S. Potts, of Philadelphia, writes: "In my experience with allonal I have used it in several cases of persistent hiccough with excellent results; it acted better than morphine. In what appeared to be a case of socalled Sluder's neuralgia, it controlled the paroxysms of sneezing and induced sleep."

Dr. Franklin G. Ebaugh, of Philadelphia, writes that allonal is of considerable value as an analgesic in tabetics, and states, "I also used it in cases of agitated depression and was quite pleased with the results. These patients were those who manifest constant agitation, moaning, wringing their hands, etc., which are so troublesome in our wards, especially the women's psychopathic. After allopal administration they were less agitated, cooperated better with ward routine and slept better. I hope to use the drug further in this type of cases."

Dr. George F. Phelps writes as follows: "Since the introduction of allonal for the purpose of relieving pain, and also for sedative and hypnotic effects, I can from my own personal experience feel certain that we have in this valuable drug a nonnarcotic of much value, especially in severe conditions where the dreaded hypodermic of morphine is used. I cite the following cases from personal experience.

"First, gastric crises in tabes, and the sharp lancinating pains so prominent in that condition.

"Second, mild and severe cases of insomnia.

"Third, during the menstrual periods I find it of great value, beginning three days before time.

"Fourth, in cases of neuritis, mild or severe.

"In each individual case I govern my dose according to the severity of the case.

"I might also add that during the past summer I had under my care a patient suffering from chronic prostatitis with a hypochondriac syndrome in which I used allonal with remarkable success."

Dr. S. F. Gilpin states "with a case of persistent luetic headache which was not relieved by morphine, ten grains of allonal gave a complete night's rest without any aftereffects the next day. In a case of brachial neuritis, which did not respond to other treatment, allonal was given every night for pain, produced excellent results and no aftereffects were noted and was easily withdrawn." Dr. Gilpin also states that allonal acts very well in cases of insomnia without pain.

Dr. B. F. Weiss cites the following cases: Case I.—Painful menstruation with distress and neurotic symptoms—ten grains every three hours, until relieved; symptoms subsided in the course of twelve hours. Case II—Trigeminal neuralgia following extraction of teeth, excruciating pains relieved by ten

grains every two hours, after three doses given. Case III.—Severe pains at onset of Bell's palsy—acute symptoms subsided after administration of allonal. Ten grains every three hours in the course of a day. Case IV.—Hodgkin's disease—nodules produced pain by pressure along superficial nerve trunks. Beneficial results from administration of ten grains every four hours—the only drug which during its use practically eliminated pain.

Dr. F. C. Becker reports as follows: "A case of tic douloureux in a male thirty-nine years of age. The condition existed for ten years. Allonal was administered as follows: ten grains at night, five grains in the morning running the dose up to thirty to forty grains every twenty-four hours. Gradual withdrawal after the use of the drug for eight or nine months. The patient has had no treatment and no recurrence of the tic since withdrawal about five months ago."

These experiences with the new drug in the period since its announcement in a previous paper in February, 1922 (1), confirm well the statement then made that "From the experiences quoted, it seems safe to conclude that the new drug is a remedy of real value for controlling insomnia and pain, and that it will enable us to get along with less of the narcotic pain allaying remedies." In addition, its use in the treatment of drug addicts has proved so beneficial as to warrant the hope that wide investigations will be made with it in this field.

I wish to thank Dr. F. X. Dercum, Dr. J. A. Jackson, Dr. C. S. Potts, Dr. F. G. Ebaugh, Dr. G. F. Phelps, Dr. S. F. Gilpin, Dr. B. F. Weiss, Dr. F. C. Becker, and Dr. H. Ungerleider for the reports furnished me and the kind permission to quote them in this review.

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The author's references will appear in his reprints.

CYSTS OF THE PROSTATE AND AN UNUSUAL CASE SIMULATING VESICAL CALCULUS

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Owing to the extreme rarity of this condition, little has been written about it in literature. I have encountered it but twice in my practice. In one of the cases it was discovered accidentally in the course of a routine examination, while in the other there were well marked symptoms resembling those of vesical calculus. I found it, therefore, of sufficient importance to add it to those already reported.

Before entering into a detailed discussion of these cases, it will be well to consider the genesis of cysts in general. A cyst represents a collection of fluid surrounded by a capsule. The capsular lining may be made up of, a, cubical or columnar epithelium; b, endothelium; c, ependyma cells; d, squamous epithelium, or, e, composite cells.

Cysts are formed by abnormal dilatations of preexisting cavities, as a result of secretion into them at a greater rate than absorption proceeds from them. They may be of antenatal origin, such as, thyrolingual and branchial cysts, due to the persistence of certain parts of the fetal ducts; on the other hand, they may be caused by incomplete development of ducts; the cystic kidney and the cystic liver are good examples of the latter. Then again, they may be acquired, due to obstruction of the ducts either from within or from without.

The acquired cysts comprise, 1, secretory cysts; 2, hemorrhagic cysts, due to the escape of blood and subsequent encapsulation; 3, necrotic cysts, due to local death of tissue with liquefaction and encapsulation, and 4, parasitic cysts, due to development of metazoan parasites within the organism, such parasites possessing a cystic or saccular stage of development.

When cellular activity leads to hypersecretion into a cavity unprovided with an outlet, or when that outlet is obstructed, then the fluid is secreted against a certain pressure. The pressure in general is low, only above that in the capillaries; but, as the secretion continues, and the absorption through the surrounding vessels and lymphatics is less rapid than the discharge into the cavity, there results a gradual distention of the cavity. *Pari passu* with the increased tension, there is an actual overgrowth of the lining epithelium and the fibrous stroma. Eventually, as the pressure increases, the nutrition of the lining cells is cut off. They, then, atrophy, and the cubical cells begin to flatten out. The watery contents of such cysts are slowly but constantly undergoing absorption; hence, they become more concentrated and assume a jellylike consistency.

Genesis of cysts in the male genital organs.—In the male, the mesonephros, or Wolffian body is represented by the paradidymis, and the Wolffian tubules by the vasa efferentia. Of the latter we recognize three groups; the main group constitutes the epididymis; the most distal tubules give rise to the stalked hydatids at the upper pole of the testis, or the globus major of the epididymis. The proximal remnants in connection with the lower end of the testis form a series of blind tubules, constituting the socalled paradidymis. Along with these and resembling in its relationship the Kobelts tubules (being blind distally, but communicating proximally with the efferent tubes) is the vas aberrans. To the blind tubules of the paradidymis are ascribed certain multiple cysts of the testis. Just as in connection with the Wolffian tubules in the female, there may arise parovarian cysts, so, apparently, from the vasa efferentia, the homologous organs, may arise solitary cysts, constituting what is known as encysted hydrocele of the testis, being distinct and different in origin from that of a hydrocele of the tunica vaginalis.

Of the Müllerian ducts in the male only two remnants have so far been determined, namely, the two ends, and of these usually only one, the distal or anterior end in association with the globus major of the epididymis, gives rise to cysts, forming what is known as the sessile hydatid. (Usually two such hydatids are present when exposing the testicle, one being the remains of the Wolffian duct, and the other that of the Müllerian duct.) The lower end fuses with its fellow of the other side in the substance of the prostate forming the sinus prostaticus, being the homologue of the uterus and the vagina, and situated between the seminal ducts. According to Adami (1).

this end never forms cysts, but clinical experience does not support this view. On the contrary, I believe, that congenital cysts of the prostate, from their position between the two ejaculatory ducts, point to their origin from the Müllerian ducts. Of the congenital cysts of the prostate the common ones would be those of the sinus prostaticus, as will be shown by the two cases to be cited. Small cysts of the utricle are, in all probability, not so extremely rare, as can be attested to by my clinical experience. I have casually, in the course of cystourethroscopic examinations, observed in not a few cases small cystic bodies protruding from the utricle which I have been at a loss to explain until recently.

Acquired cysts of smaller size within other parts of the prostatic substance are not so rare as the congenital ones, particularly in association with prostatic adenoma, but are usually too small to be felt by rectum.

Symptoms depend entirely on the location and the size of the cyst. In the majority of cases when small they may be accidentally discovered during a routine examination; if they are larger in size, to about one to two cm. in diameter with the capsule intact, they usually cause no symptoms. On the other hand, if the cyst ruptures and discharges a thick gelatinous substance into the urethra through a small rent in the capsule, then pain at the neck of the bladder, tenesmus and dysuria may follow as a result of it. If the cyst grows upwards toward the bladder, it may interfere with micturition like a prostatic adenoma, and may in extreme cases cause complete retention. Few such cases have been reported. The cyst giving rise to such grave symptoms is usually of hydatid origin. One such case has been reported (3). The symptoms in this case were those of urinary and intestinal obstruction. The authors could not differentiate prostatic tissue at all, as they were of the opinion that the prostate was entirely destroyed by the enormous cyst. It is stated by most English and French authorities that hydatids never occur in the prostate, but rather in the pelvis between the rectum and the bladder. The prostate, however, usually suffers complete absorption in those cases.

CASE HISTORIES.

The following two cases came to my observation, one of which was discovered by me accidentally about ten years ago during a routine examination in a patient who had no symptoms referable to the cyst. The other patient was seen by me recently, and presented definite symptoms caused by the presence of a cyst.

CASE I.—L. C., aged twenty-four, came to me in 1912 in the early stage of a primary gonorrheal urethritis. On examination I found a cyst measuring about two cm. in diameter in the substance of the prostate near its base, occupying the interval between the two ejaculatory ducts. This was not a retention cyst as it had been present the first day of his infection before there was any chance for the infection to travel to the prostate. He was free from infection at the end of six weeks without involvement of his adnexa. I have examined him since then from time to time to about a month ago. At that time the cyst was still there, being of the same size and presenting no symptoms.

CASE II.—W. S. C., aged thirty-five, married, father of three children, came to me on November 15, 1922, with the following history: Two weeks prior to date he had an attack of pain at the neck of the bladder, dysuria and terminal hematuria. This attack had passed off and was followed by another similar one ten days later. He was then referred by his physician to me. On closer questioning I elicited the fact that he had passed what looked like clots at the end of urination, but, in reality, was only a gelatinous substance. He, furthermore, complained of a chronic dull pain in the small of the back. The examination revealed a very large pendulous scrotum reaching to midway between the groin and the knee, and occupied by the most pronounced superficial and deep varicosities.

The examination of the prostate showed it to be of normal size, with a smooth and even surface. In the region of the base, and occupying the interval of the two ejaculatory ducts, was a cystic body with tense walls about two cm. in diameter.

The bladder was normal; both ureters patent in their entire extent, and the urine drawn from each kidney was normal chemically, macroscopically and microscopically.

The posterior urethra in the region of the colliculus seminalis was edematous with engorged blood-vessels; the utricle was occupied by a cystic swelling, a condition which I have observed a number of times prior to this. The floor of the right prostatic sulcus and the right lateral wall of the verumontana was raised and rounded as if impinged upon by a solid body from behind.

The x ray examination of the entire genitourinary tract, including the prostate for a possible calculus, was negative.

From the analysis of the symptoms and the physical findings, the symptoms can be easily explained. A cyst in the prostate like a cyst elsewhere is made up of fluid contents. The fluid, in the course of time, is either partly or wholly replaced by a colloidal or gelatinous substance. The cyst contents, when under great pressure, aided by muscular contractions, cause the cyst wall to rupture at a point of least resistance into the urethra, and as the contents are thick with but a small opening for drainage, colicky pains follow just as in any other hollow viscus which tries to rid itself of a foreign body. This constant dragging pain is accounted for by a pendulous scrotum and pronounced varicocele. The patient refused surgical treatment for either of the conditions. Proper support has relieved his backache, and the other symptoms traceable to the cyst have not returned.

Diagnosis.—When the cyst is of moderate size it can be easily palpated by rectum. It is a circumscribed swelling bulging into the rectum with tense walls. It has a well defined capsule and ordinarily any amount of pressure exerted upon it will not empty it of its contents, differing in that from a localized collection of pus in the prostate when near the urethra, which easily ruptures into it. In a cyst there is no tenderness either in the cyst wall or anywhere else in the prostate, whereas, in prostatic abscess there is excruciating pain and tenderness, constitutional symptoms, marked urinary symptoms, and usually, though not invariably, a history of infection. A cyst of the sinus prostaticus is always situated in

midline, while a prostatic abscess occupies either lobe, except when the entire prostate is involved in the suppurative process. Then the entire prostate is a large fluctuating mass.

Prostatic calculi are hard, often eliciting crepitations, usually forming within the sacculi of the gland and are, therefore, placed laterally instead of centrally. Their presence are often shown by the x ray.

Tuberculous nodules are harder unless caseation takes place. Then they are boggy and behave like a prostatic abscess. There may be other signs of tuberculosis elsewhere in the body.

Of the malignant growths sarcomata are of prime importance to be differentiated from cysts, for they, too, have a soft fluctuating feel; but they extend rapidly, running an acute course, and instead of growing toward the urethra, they have a tendency to grow into the rectum toward the sacrum, causing intestinal obstruction rather early, and, indeed, the patient may first present himself for relief of intestinal obstruction. One such case came to my notice at the Metropolitan Hospital.

Case III.—S. G., aged twenty-four, admitted to the Metropolitan Hospital as a transfer from another hospital on August 13, 1920. On July 10th of the same year he had been operated on at another hospital for intestinal obstruction where a large mass was discovered in the pelvis. He was then transferred to the Metropolitan Hospital. The examination of the prostate revealed an enormous soft swelling of the prostate, the examining finger reaching only to the left side of the growth under great difficulty, for, practically the entire rectum was filled with the tumor. In the same patient there had first developed urinary obstructive symptoms after his operation. The patient had become toxic and comatose for about four days prior to his death, which resulted on August 19th of the same year.

TREATMENT.

Treatment depends entirely upon the extent of the cyst, and the inconvenience it causes the patient. If it is small and merely discovered accidentally, it had better be left alone; if, on the other hand, it is large enough to cause distress, then one of three procedures is open to the surgeon, namely, opening the cyst through the urethra by means of the cystourethroscope and washing out the cavity. This, however, can be hardly considered curative. It may be applied to smaller cysts visible through the cystoscope but which are not palpable through the rectum. The second procedure is surgical, and this again may be conservative if the cyst is of the retention variety. Under this condition it may be treated like an abscess of the prostate, by incision and drainage through the perineum. If, on the other hand, it is of congenital origin, removal of the germinal layer must be resorted to before hoping for any cure. This is best accomplished by the open method employed for a perineal prostatectomy.

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2. Minot: *Embryology.*

3. Plaggemeyer and Cumming: Hydatid Cyst of the Prostate. *Journal of Urology,* p. 207, 1922.

120 East Thirty-fourth Street.

Treatment of Gonococcal Infection by Diathermy.—The reason for the selection of diathermy for the treatment of gonococcal infections by E. P. Cumberbatch and C. A. Robinson (*British Medical Journal,* July 14, 1923) is because the gonococcus can be destroyed at a temperature which is not high enough to damage the living tissues and because the diathermy raises the temperature of the tissues *en masse,* whereas other methods of applying heat raise the temperature of the superficial parts only. In almost all of the cases of gonococcal arthritis treated the pain was abolished, the swelling was reduced, and the range of motion was increased within a comparatively short period of time. Cases of gonococcal orchitis and epididymitis without exception quickly were relieved of pain and swelling after diathermy, even if the symptoms were severe. Convincing proof of the therapeutic power of diathermy in gonococcal infection was furnished by the disappearance of pain and swelling from joints or scrotum after the application of the treatment to the site of the original infection. Cases of gonococcal arthritis were freed from pain after after application of diathermy to the urethra and prostate, or urethra and cervix, without the inclusion of the joints in the treatment. There were also cases in which the application of diathermy to the joints did not procure much relief until the parts originally infected were included in the treatment. Diathermy was also applied to the urethra and cervix uteri in the female in cases in which these parts alone were infected. Such applications were followed by disappearance of the gonococci and cessation or diminution of the discharge. The effectiveness of the treatment was demonstrated by the failure to find gonococci in repeated attempts and the subsidence of arthritis after the application of diathermy, not to the joints but to the parts originally infected. Good results were also obtained in the treatment of prostatitis.

Experimental Observations on the Prophylaxis and Treatment of Syphilis.—Henry J. Nichols and John E. Walker (*The Journal of Experimental Medicine,* April, 1923) produced 100 per cent. of infections in rabbits by inoculating the scarified surface of both sides of the scrotum with suspensions of Treponema pallidum. By gland transfers from animals with positive local inoculations, 87.5 per cent. of takes were produced. These methods were used to test the prophylactic value of thirty per cent. calomel ointment, which proved efficacious up to eight hours after inoculation with syphilis. No marked differences appeared between the action of calomel in a base of lanolin and vaseline and in a base of benzoinated lard and wax. Five animals died of mercurial nephritis following prophylaxis with a large amount of calomel ointment. The method of gland transfers was also used for testing the sterilizing effect of arsphenamine and neoarsphenamine on old infections in the rabbit, with complete abolishment of the infection in every instance, whether by one, two or four doses. From the fact that by the most rigid tests available syphilis in a mammal has been abolished by arsphenamine it may be concluded that by sufficient treatment the same results can be accomplished in man.

Proceedings of Societies

SOUTHERN SURGICAL ASSOCIATION

Thirty-Fifth Annual Meeting, Held at Memphis, Tennessee, December 12 to 14, 1922.

Dr. C. Jeff Miller, of New Orleans, in the Chair.

(*Concluded from page 63*)

Autotransfusion.—Dr. Lucius E. Burch, of Nashville, Tenn., reported a case of splenectomy for splenic anemia. The operation was difficult and bloody. The large amount of blood that was lost in the abdomen during the operation was recovered by means of expressing the contents of the abdominal packs into a glass receptacle. A little over eight hundred c.c. of blood was recovered, and after this was citrated and strained through four layers of gauze, it was injected into a vein at the elbow. At the time the transfusion was started, the pulse was 140 and barely perceptible. At its completion, the pulse was 102 and strong, and the patient's color was good. There was no reaction following the transfusion, operative recovery was unusually smooth, and at the end of two weeks the patient was able to leave the hospital and return to his home. He had used this procedure in three other cases successfully, two of ruptured tubal pregnancy, and one a nephrectomy.

Brain Abscess.—Dr. Harry Hyland Kerr, of Washington, D. C., stated that brain abscess in general was difficult of diagnosis, and especially difficult of treatment. A study of some 120 cases in the literature of abscess of the frontal lobe showed nearly half of them undiagnosed until autopsy, and the mortality from this type in the neighborhood of eighty per cent. It was, therefore, incumbent upon us to study all cases with the greatest care. He reported six additional cases. Persistent headache with sustained leucocytosis, and especially the presence of retinal changes indicative of pressure in cases of drained frontal sinusitis or ethmoiditis, should demand exploration. Exploration by the two stage operation through a sterile field might be indicated. Direct drainage with a minimum of trauma should be established and not be disturbed until all symptoms had subsided. It was of paramount importance to drain a brain abscess too long rather than too short a time.

Factors of Safety in Thyroid Surgery.—Dr. Willard Bartlett, of St. Louis, Mo., said that during the last two years he had devoted special study to the problem of lessening mortality and shortening morbidity in the toxic goitres. He felt that this had been done in his clinic rather by a study of routine fundamental principles than by any technical improvements. In making a graduated approach to the final complete, double resection, as many as seven operative attacks had been made on a single individual. All patients were classified as to operative indications in the following five groups: 1, ligation of superior thyroid vessel group; 2, unilateral resection of the male subject; 3, unilateral resection of the female subject; 4, bilateral resection with wound left open, and 5, bilateral resection with complete wound closure. Three exceedingly important considerations were: 1, Anesthesia (one half of one per cent. novocaine infiltration with preliminary narcotics.) 2. The operation performed wherever the patient's nervous system was most protected. 3. The wide open wound in the highly toxic individual. Five considerations, above all others, influenced him in his estimate of the operative risk. 1. Myocardium. 2. Kidney function. 3. Metabolic rate (relative). 4. Weight (relative). 5. Selfcontrol.

Report of a Case of Ranula With Comments on the Thompson Theory of Origin.—Dr. V. P. Blair, of St. Louis, Mo., reported this case of ranula chiefly with the idea of reopening the discussion of Thompson's theory of origin. Two classes of mucoid cysts in and about the floor of the mouth occurred. 1. Relatively small cysts that appeared to lie in or just under the mucosa of the floor of the mouth or under the surface of the tongue which tended to protude frankly into the mouth. The origin of these is from various mucous or submucous glands of that region and in his observation were comparatively rare. Excision was a simple matter. 2. The type which lay in the floor of the mouth underneath the mucosa and submucous tissues and had what Thompson called a burrowing quality. These might push the tip of the tongue and the mucosa of the floor upward and backward, but the greater bulk always lay buried deep in the tissue of the floor. Removal was often difficult. The most commonly accepted hypothesis had been that such were obstruction cysts of the sublingual glands which presupposed a unique reaction to such obstruction. He thought Thompson's hypothesis, that the deep ranula and related cysts originated from migrated positions of the cervical sinus was sufficiently broad to explain all hitherto observed types. It offered at least a logical basis for adequate surgery. The case under discussion had a cystic mass on the left side of the floor of the mouth, seen from within the mouth, and also externally in the submaxillary region when she swallowed. The mass could be felt bimanually. Fluctuation was present. A swelling was also present on the right side, seen from within the mouth and apparently lost posteriorly in the neighborhood of the first molar. The swelling on the left side was approached from an external submaxillary region incision. A cystic mass protuded from the floor of the mouth behind the posterior edge of the mylohyoid muscle. The mass was dissected free from the hypoglossus muscle, inner internal pterygoid muscle and from the wall of the pharynx. On completion of excision, the right sided mass had disappeared.

White Bile in the Common Duct.—Dr. E. Starr Judd and Dr. John H. Lyons, of Rochester, Minn., said that the presence of a colorless liquid (without bile pigment) in obstructed common and hepatic ducts usually indicated increased operative risk, and in the Mayo Clinic series the operative mortality was twenty-one per cent. in spite of cautious preoperative measures and postoperative care, including calcium, transfusions, and so forth. They

believed that while the mortality was high, it was probably no higher than it would be in a series of cases of complete biliary obstruction of the same duration with green bile in the common and hepatic ducts. Their nineteen cases occurred among 649 operations upon the common and hepatic ducts in four years. In nine of these, the obstruction was due to stone in the common or hepatic duct and in six to trauma at a previous cholecystectomy; in two the obstruction was due to carcinoma (one of the pancreas and one of the ampulla), and in one it was due to pancreatitis. In one instance the white bile seemed to occur as a result of cholangitis. In no instance where the gallbladder was present, was it found to be normal. Seventeen of the nineteen patients were intensely jaundiced at the time of operation and there had been no recent decrease in the jaundice. One patient had a biliary fistula; one was not jaundiced, although there was complete obstruction to the common duct by stone. In this latter instance, cholecystectomy and cholecystostomy with removal of the stone resulted in drainage of bile on the fourth day postoperatively. The patient made an uneventful immediate convalescence, but died on the thirty-second day after operation, due to acute hemorrhagic pancreatitis. White bile occurred only when the obstructed ducts were not connected with a normally functioning gallbladder, and this fluid was a secretion of the mucosa of the biliary passages which occurred with obstruction when the secretion of the mucosa of these passages was greater than its resorption. The liver did not necessarily cease to secrete bile in these cases, although it was probable that the hepatic function might be suspended for a time in certain patients and entirely reestablished later.

Relative Value of Surgery and X Ray in the Treatment of Hyperthyroidism.—Dr. E. P. Richardson, of Boston, stated that in the present stage of our knowledge of hyperthyroidism, the most effective means of treatment were surgery and radiation. In the majority of instances improvement was due to the x ray. It had not proved possible to select the cases in which x ray would be effective. Cases of adenoma with hyperthyroidism were better treated by surgery than by x ray. Cases in which organic damage was present should receive the more certain detoxication possible with surgery. In early cases, x ray treatment for four months, during which the patient received ordinarily five treatments, might be carried out. The patients should be under supervision of a medical man familiar with this condition. The progress of treatment should be checked by determination of the basal metabolism. If promise of cure had not been obtained in four months, the patient should be treated surgically. The chief arguments in favor of the x ray were its lack of immediate risk and its possibility of indefinite expansion as a means of treatment. The ordinary objections to x ray treatment if carried out under proper control did not seem to him of great weight. X ray treatment, as given in his clinic, had not increased operative difficulty. The results of x ray in the patients apparently cured seemed satisfactory. In the cases where x ray frankly failed, the patients were willing to undergo operation, and no great harm was done. The patients who were improved but not cured presented the real difficulty. They were sufficiently improved to carry on their work, and yet retained a degree of toxicity which probably would lead to organic damage and shorten their usefulness. Yet they were unwilling to undergo operation. He believed that this class of patients, improved but not cured, presented the most serious argument against the use of the x ray in hyperthyroidism.

Treatment of Diverticulum of the Esophagus.—Dr. Charles H. Mayo, of Rochester, Minn., stated that according to the literature, only a few hundred patients with diverticulum of the esophagus had been operated upon. Although the condition was benign, the mortality had been as high as for more serious operations, such as malignant conditions in the abdomen. In one series of two hundred collected cases reported in the literature, there were sixteen deaths; in another of one hundred and nine cases, twelve deaths, and in one of one hundred, ten deaths after one stage operations, and twenty-eight fistulas. Some time ago Dr. Judd presented a record of fifty-two patients operated upon at the Clinic with three deaths. The number of cases had now been increased to seventy-four without further mortality.

Acute Atrophy of the Liver With Nodular Hyperplasia.—Dr. E. H. Pool and Dr. F. W. Bancroft, of New York, said that acute yellow atrophy of the liver was of some interest to the surgeon, because in the subacute or chronic cases the symptoms occasionally led to unnecessary and unfortunate exploratory operations, and because the operative findings in such cases were likely to be wrongly interpreted. Acute yellow atrophy of the liver was characterized by marked diminution in the size of the liver, which often became reduced fifty per cent. in less than two weeks. The etiology was obscure. The condition had been attributed to infection, to the action of some toxin, or to a combination of these two. Nothing, however, was actually known as to the character and source of the etiological factors. The disease occurred in apparently healthy individuals, as well as in those who presented some acute or chronic infection.

The symptoms developed insidiously and consisted for the most part in headache, digestive disturbances, such as vomiting and epigastric discomfort, jaundice, moderate fever, and later delirium, convulsions and coma. Many cases terminated fatally in a few weeks but some persisted for months. The clinical features usually presented a picture sufficiently definite to warrant a probable diagnosis and to indicate examination of the urine for leucin and tyrosin, the presence of which was strongly corroborative. On account of the rarity of the disease this was not often thought of as in their cases. The first significant pathological change consisted in fatty disintegration of the liver cells, as a result of which the liver enlarged. Rapid absorption of the products of disintegration followed with diminution in the size of the liver. The destroyed areas presented only connective tissues with large numbers of tubules like small biliary ducts. Localized areas of hyperplastic tissue devel-

oped, apparently representing a compensatory reproduction of the lost hepatic parenchyma. The appearance of the organ depended upon the stage of the disease. The hyperplastic changes were noted particularly in the prolonged cases and constituted a late feature. The lesion under consideration was of interest to the surgeon chiefly because of the great uncertainty and embarrassment which resulted when it was encountered at operation and not identified. They had each had such an experience. The liver, however, presented so characteristic a picture that the true condition should be identified.

Surgery of Acute Disease of the Gallbladder.—Dr. Robert Caldwell, of Nashville, Tenn., stated that every case of acute cholecystitis should be treated surgically, just as is acute appendicitis. Operation should be done as early as possible after the onset. The plan of treatment should be cholecystectomy when at all possible. The severe cases should be done the quickest way and with the least manipulation. The leaving of a clamp on the cystic duct and vessel would fill this requirement.

Sarcoma or Embryoma of the Kidney in Infants.—Dr. Charles R. Robins, of Richmond, Va., reported the case of an infant, male, twelve months of age, sent to him January 4, 1921, on account of a lump in the right side of the abdomen. The abdomen was distended and in the right side a globular tumor was found nearly filling the entire abdomen. It could be palpated posteriorly in the right kidney space and flank and seemed to be somewhat attached at this point, although freely movable. The pelvis and subcostal region appeared to be clear and the tumor projected anteriorly. A diagnosis of sarcoma of the kidney was made and operation advised, which was done two days later. The incision was made in the semilunar line, and on opening the abdomen the ascending colon and small intestine were found displaced to the left of the tumor. The peritoneum was incised external to the ascending colon and the kidney removed from its bed without difficulty. The pedicle was isolated and the vessels and ureter ligated separately. At the lower pole of the kidney an aberrant artery and vein were found to enter. These were ligated separately. There was comparatively little bleeding, which was easily controlled, the peritoneum was sutured, and the abdominal wound closed without drainage. The tumor was about the size of a grapefruit and sprang from the lower pole of the kidney. The upper portion of the kidney was quite normal.

Errors in Home Treatment of Appendicitis.—Dr. Fred W. Bailey, of St. Louis, Mo., stated that the virulence of appendicitis was not decreasing, because of careless and indifferent treatment. Many forms of appendicular colic were lashed into a fulminating process by purgatives. Patients would recover from the immediate attack if sanely treated and could then be operated upon without mortality. Until the exact pathology present in each case was known, it was impossible to prognosticate the outcome. The interval operation was a misnomer. The time to operate was at the earliest moment of positive diagnosis, provided a skilful surgeon was available and the environment satisfactory. As soon as careful examination had eliminated other diseases, removal of the affected appendix was indicated. If the process was acute and progressive and the patient's resistance low, release of the pent up pus through a gridiron exposure, under local anesthesia, was without shock and the surest method of reestablishing normal resistance. Was it not feasible to impress the public with these few facts and suggestions?—1. Abdominal pain, whether or not attended by nausea or vomiting, was a danger signal and should be treated with due respect. It might indicate anything from a simple colic to impending death. 2. The most effective premedical or home treatment included immediate and complete bed rest, nothing by mouth that peristalsis might remain inactive, positively no cathartic of any sort, and if, within a few hours, this treatment aided by a small low enema had not secured relief, transfer the responsibility to a physician.

Brain Abscess With Pathological Observations.—Dr. Charles Bagley, Jr., of Baltimore, Md., reported a series of twenty cases of brain abscess; seventeen patients were operated upon with a mortality of forty-six per cent.; eight patients operated upon and the three not operated upon died, and autopsies were performed in eight of the eleven fatal cases. He mentioned four types of the various methods of extension of infection from the primary seat to the secondary abscess in the brain. 1. The group in which there was an extradural abscess adjacent to the cavity of primary infection, of which there were three divisions. 2. When there was no visible tract of inflammation connecting the initial focus and the abscess cavity, the infection having been carried through the circulation. In some instances this was due to the lack of valves in the veins extending from the cerebellum into the sigmoid sinus, making possible the backing up of the infected contents of the sigmoid into the cerebellum. The same anatomical arrangement applied to the tympanic cavity and temporal lobe through the superior petrosal sinus. 3. That type in which there was introduced a foreign body, the tract of which remained open, acting as the abscess stalk. 4. That type in which the tract of entrance healed an abscess developed about the foreign body, the inflammation entirely limited to the position of the foreign body. In this group the abscess was secondary to injuries, such as a gunshot wound or severe blow, the cavity remaining in direct communication with the exterior of the skull.

Quinine Necrosis of Muscle.—Philip Figdor and D. Denham Pinnock (*British Medical Journal*, July 1, 1922) report an unusual sequel to the early treatment of malaria with intramuscular injections of quinine. A definite separation and encysting of the necrosed muscle has never been known to occur before, although the necrosis of muscle from such intramuscular injections is not rare. The necrosis was probably caused both by the direct action of the drug as well as by the pressure exerted by the injected fluid, great enough to cut off the blood supply of the muscle. The necrosed muscle acted as a foreign body and thus became encapsulated.

Abstracts from Current Literature

CARDIOVASCULAR DISEASES.

Radial Pulse in Intrathoracic Aneurysms.—C. O. Hawthorne (*British Medical Journal,* May 26, 1923) states that in order to be of diagnostic value the inequality between the sphygmographic and sphygmomanometric measurements on the two sides must be pronounced, and even then the possibility of a unilateral interference with the arterial circulation other than aneurysm must be remembered. Furthermore, marked differences are unusual even in cases of aneurysm, the readings on the two sides often being identical or nearly so. Neither unilateral delay in the pulse wave nor modification in the height or in the form of the wave is to be observed as a frequent clinical experience in thoracic aneurysm. The absence of such conditions from an individual case is therefore of little diagnostic import, and while their positive values, when present, may be considerable, even these are subject to marked qualification.

Indications and Modes of Administration of Ouabain.—Routier (*Journal de médecine de Paris,* September 22, 1923) maintains that ouabain is formally indicated in both paroxysmal and subacute manifestations of left ventricular insufficiency. The paroxysmal group includes acute edema of the lungs, atypical edema attacks, anginal attacks, and paroxysms of dyspnea, with or without pulmonary signs. The subacute group includes nonparoxysmal, persistent pulmonary edema, with repeated slight exacerbations; cardiac pleurisy; stasis manifestations, such as enlarged liver and edema of the extremities, and also the alternating pulse, tachycardia, bradycardia, and premature contractions. The drug should be given intravenously as soon as the diagnosis is made, in single doses not exceeding one fourth milligram, which may, however, be repeated once or twice a day for a number of days in succession, as the drug is not cumulative. Several thousand injections of one fourth milligram have been given by the author and his associates, without disturbance, provided the injection is made slowly and strictly into the vein. The injections should be continued until circulatory equilibrium has been completely restored. In one heart case having bilateral pleural effusion, the injections were continued for a month, until the effusions had been wholly absorbed. In some cases of left ventricular insufficiency, in which the indications were less urgent, satisfactory results were obtained by oral use of ouabain. In a case of aortic and mitral disease of rheumatic origin one hundred drops a day of a 0.2 per cent. ouabain solution were given by mouth for four days, then reduced to seventy-five drops, with good results. Ouabain by mouth may be used also in a variety of other conditions, but will fail unless at least one milligram is given in a single daily dose. Even two milligrams must be taken in a single dose to be effective, but larger daily amounts can be divided. One of the commonest indications for ouabain by the mouth is for the perpetuation of the effect of intravenous injections; when the latter are stopped, one milligram should be given daily at lunch in one dose, with or without the addition of 1.5 grams of theobromine. Ouabain by mouth complements and keeps up the effect of digitalis in valvular disease with more or less marked decompensation. In a case of auricular fibrillation in which digitalis, even in small doses, induced bradycardia, cardiac erethism, and consequent unpleasant symptoms when continued more than a short time, ouabain in a single daily dose of one milligram gave the best results during the two week intervals in which digitalis was temporarily discontinued. Ouabain by mouth can be advantageously given to assist the heart muscle in cases of high blood pressure—even without decompensation—in aortic arterial disease, and in paroxysmal tachycardia. In these cases, one milligram a day is given for eight to fifteen days in each month. It may with advantage be substituted for digitalis in acute diseases in which heart stimulation is required. In giving quinidine, a depressant to the heart muscle, digitalis or strophanthus should always be added. Ouabain by the mouth is very suitable in such cases, as it can be given in relatively large doses without toxic cumulative effects.

Syphilitic Myocarditis.—S. Bloch (*Journal de médecine de Paris,* September 22, 1923) notes that while the clinical picture of syphilitic myocarditis is variable, there is an ordinary form with manifestations similar to those of the average case of cardiac insufficiency, but occurring in a relatively young subject with either manifest or latent syphilis. A feature of the condition is that it comes on rather rapidly, in a few months or even weeks. The Wassermann reaction is always strongly positive, and this is very significant in a case in which the heart weakness can be accounted for neither by the kidneys, the lungs, high blood pressure, nor valvular disease. An important indication, furthermore, is that while the condition yields to heart tonics at first, it soon returns unless antisyphilitic treatment is given in addition. On the other hand, early and prolonged, though cautious, treatment may give results even more brilliant than those obtained in syphilitic aortitis. The recorded cases of cured syphilitic myocarditis are rather numerous. Aside from this commoner form, there is a latent form, detected only at autopsy; also a form with sudden death; a form resembling ordinary senile myocarditis, running a slow course, and monosymptomatic forms with lesions localized in certain "specialized" regions of the heart, with consequent Stokes-Adams syndrome, auricular fibrillation, or premature contractions of a certain type. In the treatment, heart tonics should be given first, and antisyphilitic treatment follow. Digitalis or strophanthus should be used after the usual preparation by drastic catharsis, venesection, and wet or dry cupping, according to the case. A milk diet should be ordered during the treatment with heart tonics. The digitalis effects may advantageously be supplemented with theobromine and a salt free diet. As soon as diuresis has been established, the pulse slowed, the heart sounds improved, dyspnea allayed, and proper sleep afforded, the antisyphilitic treatment should be begun. Hypodermic injections of soluble mercurials, such as the biniodide, may be given, provided edema

has disappeared. Neoarsphenamine in doses not exceeding 0.45 gram should not be omitted. Potassium iodide is a good auxiliary remedy. Bismuth, recently praised by Laubry and Bordet for syphilitic aortitis, seems especially indicated by reason of its efficacy, perfect tolerance, and gentle action. One patient who at first did not tolerate injections of three mils of bismuth iodoquinate solution on alternate days, did very well on two mil injections every three days.

Ventricular Fibrillation in Man with Temporary Cardiac Recovery.—Frederick A. Willius (*Journal of Laboratory and Clinical Medicine,* May, 1923) states that the case reported is the second instance on record of temporary cardiac recovery in man observed following ventricular fibrillation. The patient, a man forty-four years old, showed progressive cardiac failure. During the syncopal attack ventricular fibrillation occurred. The patient lived thirty-four and a half hours after this attack.

Atresia of the Pulmonary Artery in a Congenitally Defective Heart.—Walter Blair Stewart (*Journal of Laboratory and Clinical Medicine,* April, 1923) describes a female infant, four and a half months old, coming to autopsy, in whom the following interesting defects were present: Congenital atresia of the pulmonary artery, pulmonary valve and infundibulum of the right ventricle; origin of the aorta from the right ventricle; presence of a patent ductus arteriosus, and defective ventricular and auricular septa; complete cleft palate and right hare lip. The child was in fairly good health up to the time of death, and died only after a plastic operation had been performed prior to which she had shown intermittent cyanosis and attacks of strangulation.

Investigations on the Immediate Effect of Heavy Exercise (Stair Climbing) on Some Phases of Circulation and Respiration in Normal Individuals.—Christen Lundsgaard and Eggert Möller (*Journal of Biological Chemistry,* April, 1923) found that running up and down a flight of stairs once produced the same effect on the oxygen content of the venous blood as did running up and down five times. The oxygen content was low after the cessation of exercise. The effect on the pulse and respiration rates was markedly less after running up and down once than after five times. The oxygen content of the venous blood drawn from the arm showed no change after the subject had walked slowly up and down one flight of stairs, after riding a bicycle with brakes on for two to two and a half minutes, and after exercise with the arm (lifting a heavy load).

Prevention of Heart Disease.—F. John Poynton (*British Medical Journal,* June 2, 1923) emphasizes the weak points in the present management of rheumatic heart disease in the young and recommends the following measures which appear to be of service: 1, Improvement in medical instruction; 2, education of the public, particularly parents and school teachers, by propaganda and lectures; 3, further investigations into the incidence of chorea; 4, auxiliary country hospitals with a special department for cardiac children; 5, a schedule of suitable occupations for cardiac children; 6, a central bureau for purposes of organization, and in the far future an institution for research into and the study of rheumatism; 7, discrete treatment of local foci. The importance of careful treatment of local foci is also emphasized. The first attacks of rheumatic carditis, which constitute the most important group, are greatly improved by prolonged and skilful treatment during convalescence. With proper organization, the cases with recurrent attacks are more controlled and they are given a better chance of recovery. Physicians should learn to prevent much chorea and also more about the life history of the rheumatic child, thereby preventing many breakdowns during school life. These measures are the more valuable because the incidence of cardiac rheumatism is greater in the first fourteen years of life than at any other period.

GYNECOLOGY AND OBSTETRICS.

Isolated Torsion of a Normal Tube.—Benno Michel (*Zentralblatt für Gynäkologie,* June 4, 1922) reports one of the greatest rarities which has been reported only once before. The differential diagnosis was difficult. The woman, thirty-six years old, felt spontaneous, severe pains on the first day of her first puerperal period (1918), which recurred frequently without definite localization, especially at night after coitus or during the menstrual periods. Two days after the last menstrual period (four days previously) the patient felt a sudden, spontaneous, drawing pain in the rectum, associated with diffuse abdominal cramps. The abdomen revealed deep resistance in the right hypogastrium toward the midline and the vaginal examination revealed a tense fluctuating mass as large as a hen's egg, which suddenly disappeared on aspiration. The syringe contained both old and fresh blood. A laparotomy was done under the diagnosis of extrauterine pregnancy or a ruptured ovarian cyst with a twisted pedicle. At operation a bluish red, blackish brown, discolored tumor as large as an apple, which was adherent to the peritoneum, abdominal wall and rectum, was found to correspond with the left tube, which was markedly dilated in its ampullar portion and was connected with a normal left ovary. The pedicle itself, which consisted of the middle portion of the tube, was twisted more than twice three hundred and sixty degrees to the left and was markedly thinned out and had a glassy white color. Extirpation of the tube was followed by recovery.

Uterus Duplex Bicornis.—Wardlow and Smith (*Surgery, Gynecology, and Obstetrics,* October, 1922) state that malformations of the uterus are not uncommon, but a relatively small number are recognized. Pregnancy may occur in both horns of a uterus bicornis. Menstruation may occur during pregnancy in a bicornuate uterus. Statistics show frequent occurrence of twin pregnancy in this type of uterus. Malformations of the pelvis may or may not exist with anomalies of the uterus. Reports of uterine malformations should give complete history of menstrual function. Malformations of the uterus are frequently confused in diagnosing pelvic and abdominal lesions. When doing a hysterectomy in malformations of the uterus, always be careful to avoid injury of a misplaced ureter. The rectovesical ligament is confusing when first encountered.

Vulvovaginitis.—I. F. Stein (*Surgery, Gynecology, and Obstetrics,* January, 1923) states that vulvovaginitis is an infection which frequently is gonorrheal in origin, but may, even in purulent varieties, be nonspecific. Filth, unquestionably, plays a part in predisposing to the infection and may be the chief cause in the milder types. Diagnosis rests upon clinical evidence of the disease and smear examination made by an expert. Cultures prove positive in about fifty per cent. of gonorrheal cases and are therefore not requisite for diagnosis. Purulent vulvovaginitis should be vigorously treated by an approved method, such as that suggested by Gellhorn. A daily tub bath is an aid to local treatment and in mild nongonorrheal cases is all that is required for cure. Determination of cure rests upon the disappearance of clinical evidence of the infection, three negative smears at intervals of one week after suspending treatment, and a period of observation equal to duration of treatment.

Hysterectomy.—W. D. Phillips (*New Orleans Medical and Surgical Journal,* July, 1922) says that radium has removed the indications for hysterectomy in approximately forty per cent. of the cases. Myomectomy should be the procedure of choice in myoma of the uterus in young individuals. Supravaginal amputation of the uterus, or incomplete hysterectomy, should be the type of operation selected in the average case, providing the conditions justify it. Complete hysterectomy should be done in cases of myoma of long standing in which there is a tendency to grow rapidly, and in cases in which the cervix is diseased. Vaginal hysterectomy is the procedure of choice in cases of complete prolapse of the uterus in elderly individuals.

Therapy of Inflammatory Diseases of the Mucosa of the Uterine Body and Cervix.—Robert Joachimovits (*Zentralblatt für Gynäkologie,* November 4, 1922) found that ethereal oils are very useful remedies in inflammations of the mucous membrane of the genitals, namely, the cervix. Playfair sounds are wound around with cotton, dipped into a twenty-five per cent oily emulsion and introduced up to the internal os of the cervix. The introduction of strips of gauze, soaked in the oil, and left in the cervix for eight to twelve hours, are still more effective. This treatment was found particularly effective in local gonorrheal cervicitis. Adnexal conditions are no contraindications and erosions are not influenced unfavorably. This local treatment may be supplemented by the administration of ethereal oils by mouth or by enemas. The effect is undoubtedly due to the slow deep diffusion of the oils into the tissues as a result of the lipoid solubility, the production of a reactive aseptic inflammation and, possibly, to a specific action.

Functional Treatment of Dysmenorrhea.—As a result of his own animal experiments and the study of the literature, Fritz Ludwig (*Schweizerische medizinische Wochenschrift,* December 28, 1922) comes to the conclusion that dysmenorrhea should be considered as a disease of the tonus of the uterus; the conditions of contraction and relaxation are more or less affected by the internal secretions. Abnormal changes of contraction and relaxation, as well as continuous spastic contractions in the uterus, are chiefly responsible for dysmenorrhea. The normal tone of the uterus is kept at a medium level by the various internal secretions, just like the tone in the bloodvessels. Adrenalin sometimes shows a stimulating and sometimes an inhibitory effect in the same organism and it is therefore a regulator of the tone. A disturbance of the internal secretions (hypophysis, ovary, corpus luteum, adrenal, thyroid glands) consequently lead to dysmenorrheic disorders. Although organotherapy seems to be indicated it meets with great difficulties in practice. The substances that have an inhibitory effect on the tone are indicated, and of these papaverin (0.04 gm. three to six times) and benzyl benzoate are the best, possibly combined with narcotine, atropine, camphor, uzara, etc. Morphine and codeine are not indicated because of their stimulating effect.

Explanation of Twisting, Looping, and Knotting of the Umbilical Cord.—Hugo Sellheim (*Zentralblatt für Gynäkologie,* November 4, 1922) calls attention to the fact that if an ovum is placed in a glass vessel filled with fluid, and if this vessel is set in rotation, this motion will be transmitted to the ovum and umbilical cord; when the vessel is brought to a standstill, the ovum will undergo somersaults and the umbilical cord itself will untake many kinds of turnings and twistings. Human beings show abnormalities of the umbilical cord much more frequently than do animals, which is due to the fact that the former have a much wider range of motion in all possible axes of the body. The first stage of twisting, torsion, is the result of a simple turning of the fetus or umbilical cord on its pedicle as an axis, as in ovarian tumors. If the torsion is continued it results in looping of the cord as the second stage of torsion. If the continuous or repeated impulse to turning drives the loop against the fetus or the fetus against the loop, there results the third stage of looping or the knotting of the umbilical cord. Consequently all forceful motions, such as occur particularly in athletics and dancing, should be avoided during pregnancy.

Pyelitis During Pregnancy and the Puerperium.—Charles J. Currie (*Canadian Medical Association Journal,* July, 1922) says that pyelitis in the early months of pregnancy is not so uncommon as is supposed, and many cases escape notice altogether, both on account of the mildness of the symptoms and because the patient does not come under the observation of the obstetrician until the last months of pregnancy. These undetected chronic forms of pyelitis occurring during pregnancy may be the source of the acute trouble during the puerperium. There is great danger of mistaking pyelitis of the puerperium for acute sepsis. At least some of the abortive types of sepsis are cases of pyelitis which have undergone apparent spontaneous cure from the emptying of the pus from the pelvis of the kidney. It is necessary to make a careful uranalysis in all cases of suspected sepsis during the puerperium and of acute abdominal conditions in pregnancy. In acute cases with very high temperature the disease may run a rapidly fatal course, the patient dying in eight to ten days. But in the great majority of cases the disease shows a marked tendency to recovery under simple medical treatment, though relapses are said to be common. The treatment is simple in most cases. The patient should be put to bed so that the body

may be kept at an even temperature and the work of the kidneys reduced to a minimum. She should be kept on a fluid diet for a few days to help flush out the kidneys. The main object in medication is to see that the urinary tract is flushed out with alkaline solution and this object is best obtained by the use of potassium citrate in large doses, viz., from forty to sixty grains every two hours till the urine is alkaline when the dose may be reduced but never to the extent of allowing the urine to become acid. The urine should be examined daily to make sure of this. After all symptoms have subsided for three to four days it may be discontinued.

Urotropin is not of value in acute pyelitis and Kidd says that in some cases it is dangerous, asserting that in one instance it caused the death of his patient. In only one of this series was any of the more heroic forms of treatment required. This patient was treated with urotropin for three weeks before the alkaline treatment was given. The fever disappeared in a few days, afterward the potassium citrate was given, but the patient's general condition was so bad that it was felt necessary to induce labor. Urotropin and the acids are, however, of value in the chronic cases. Brilliant results are said to have been obtained by catheterizing the ureters and instilling silver salts into the pelvis. But this can only be done by one who is an expert in the use of the cystoscope and is not without danger in the presence of the pregnant uterus. In acute cases emptying the uterus may be necessary but is not often indicated nor always successful. The use of serums has not been satisfactory. They fail for the same reasons as they have failed in the case of septicemia. Autogenous vaccines may be of value in chronic cases.

Radiation of Pain in Lesions of the Fallopian Tube.—Maurice Marcus (*British Medical Journal,* February 3, 1923) states that lesions of the fallopian tubes cause pain which, arising in the iliac fossa, is referred down the front of the thigh to the knee. This distribution of pain is significant of an involvement of the tube and appears to be of diagnostic value. It suggests, further, that the tube is represented in the spinal cord by the eleventh and twelfth dorsal and the first three lumbar segments. With this sign a differential diagnosis between appendicitis and inflammation of the right tube may be made, the difference being that the pain of appendicitis starts usually around the umbilicus, and, felt later in the right iliac fossa, does not pass below the groin.

Retroflexion of the Uterus.—H. Meyer-Rüegg (*Schweizerische medizinische Wochenschrift,* January 11, 1923) states that women would be less troubled by disturbances due to uterine anomalies if physicians would agree to consider retroflexion merely as one of the various positions of the uterus. He gives the following conditions as to when a retroflected uterus should have its position corrected: 1, in some cases of sterility, in which no other cause for it is demonstrable; 2, in threatening incarceration in the fourth month of pregnancy; 3, when, as a result of an inadequate supporting apparatus, the uterus lies upon the levator ani muscle, extends into the genital hiatus and causes corresponding symptoms, even though they be of a partly psychogenic nature; and 4, as an adjuvant in the support of suggestion, when the psychotherapy has otherwise failed. In the first and second conditions, the correction ought to eliminate complications. In the third and fourth conditions, the associated peculiar condition of the nervous system should be looked upon as a complication, which can frequently be eliminated with the aid of the correction of the position of the uterus.

Symptomatology of Tubal Rupture in Extrauterine Pregnancy.—B. Herzfeld (*Zentralblatt für Gynäkologie,* March 31, 1923) states that in addition to the pain in the hypogastrium there may also be pain in the shoulder on the same side, apparently due to irritation of the phrenic nerve fibres in the diaphragm, as a result of the pouring out of fluid into the peritoneum. Furthermore, there is also a bladder symptom consisting of strangury, produced by the irritation of the peritoneum and the bladder by the tube, which is followed by collapse, presumably as a result of the rupture, which is favored by the increased intraabdominal pressure from urination.

Spontaneous Intrauterine Rupture of the Umbilical Cord During Labor.—Fr. Chr. Geller (*Zentralblatt für Gynäkologie,* March 3, 1923) states that the umbilical cord need not be ruptured at once, but there may be a rupture first of one artery, followed after several hours by the rupture of the other and the vein, so that fetal heart beats may be demonstrable several hours after the sign of the rupture, namely by a bloody amniotic fluid. The rupture of the cord is not dangerous for the mother or the child, provided it occurs after the delivery of the fetal head; if it occurs before that, the child can be saved only by immediate delivery. The causes of the rupture of the umbilical cord are a velamentous insertion of the cord, a short cord, and interrupted delivery of the fetal head.

Circular Tear of the Vagina.—S. Keszly (*Zentralblatt für Gynäkologie,* June 4, 1922) reports a rare case of direct trauma as the result of an accident. A virgin, twenty years old, fell from a height of one metre in such a manner that the neck of a bottle perforated her clothes and penetrated into her vagina. The entire vaginal tube showed a circular tear immediately behind the hymen and it was separated both from the paravaginal connective tissue as well as from the rectum and the urethra with inward invagination. Reconstruction of the vagina with sutures to restore the normal relationships was followed by successful healing.

Normal Amount of Blood in Pregnancy.—Georg Kaboth (*Zentralblatt für Gynäkologie,* March 31, 1923) compared the blood volume of eleven nonpregnant and twenty pregnant women. He found that the total blood volume in the nonpregnant women varied between 2805 and 4480 grams, or between 5.21 and 7.62 per cent. of the body weight. The total blood volume of the pregnant women ranged between 2982 and 4810 grams or from 5.96 to 8.5 per cent. of the body weight, after deducting the approximate weight of the fetus. The increase in the total blood volume was partly attributable to the increased amount of tissue. In the pregnant women near term and whose body weight ranged between fifty and seventy kilograms, there was an increase of 300 to 450 grams of blood.

MEDICAL JOURNAL AND RECORD

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Medicolegal Notes.

LIMITATIONS TO RIGHT OF CROSS EXAMINATION OF MEDICAL WITNESS BY MEDICAL TREATISES.

In the course of the trial of an action for personal injuries a medical expert, called by the plaintiff, was asked on cross examination if he had any authority to support certain statements made by him in the course of his cross examination. The witness named certain authorities and said they were at his home. A motion by the defendant for an order requiring the witness to produce the authorities was denied. Again, the same witness was asked to turn to a passage in a certain book referred to by him on cross examination, but the court refused to permit the witness to do so.

On appeal, the Circuit Court of Appeals, Ninth Circuit, Hoffschlaeger Co. v. Fraga, 290 Fed. 146, referred to the conflict of authority as to the extent of the use that may be made of medical treatise on the examination of expert witnesses, but found it unnecessary to consider the limitations of the rule, since counsel in this case did not bring himself within any known rule on the subject. "Clearly the court did not abuse its discretion in refusing to send the witness from the stand to his home to procure a book for the use of counsel, nor did it err in refusing to require the witness to examine a treatise to enable him to point out some line or paragraph that might support or contradict his testimony. If counsel desired to contradict the witness by some statement of the author, he should have called the attention of the witness to the statement, and not consumed the time of the court by asking the witness to look for something that might or might not exist."

PROMISE TO PAY DOCTOR'S BILLS FOR TREATING INJURED CHILD.

In an action for services rendered, the plantiff, a practising physician, claimed to have proved that the defendant, while operating his automobile, ran into and injured a child; that the defendant took the child to his parents' home and then to the plaintiff's office; that plaintiff informed defendant that the child was seriously injured and would have to be taken to a hospital and would require careful attention, and asked who would be responsible financially for the treatment, and the defendant immediately said, "I am responsible, doctor, I will pay all bills;" that the child was then taken to the hospital, where he was treated by the plaintiff for more than a month; that when the child was brought to the hospital, the matron asked the defendant if he would pay the hospital bills, and the defendant replied, "I will pay all bills;" and that subsequently at plaintiff's office the defendant stated to the plaintiff at one time that he expected to pay all the bills, and at another time that he would pay them and asked plaintiff to be as reasonable as possible, and plaintiff stated to the defendant that he would discount the bill if he would pay it without delay, which he promised to do. The defendant offered evidence to prove that he did not promise to pay or to be responsible for the services rendered, either at the time the child was in the plaintiff's office or at any subsequent time.

On appeal from judgment for the plaintiff, four questions were presented.

1. Were the circumstances such that a contract on the part of the defendant was to be inferred to pay the plaintiff for the services the value of which was sued for? The Connecticut Supreme Court of Errors answered this question in the affirmative. The defendant's express promise to pay was an original promise made orally upon the faith of which the plaintiff performed services. There were here all the elements necessary to a legal contract.

2. The plaintiff, in reliance upon the defendant's promise, performed these services which he was not legally bound to do, and this constituted in law a valid consideration for the contract.

3. The oral contract was not within the statute of frauds, since the defendant's undertaking was an original promise, and not a collateral one.

4. The action was properly brought under the common counts.

Judgment for the plaintiff was affirmed.—Douglas v. Brandt (Conn.) 121 Att. 179.

HOSPITAL INTERN HELD ENTITLED TO AWARD UNDER WORKMEN'S COMPENSATION ACT.

The New York Appellate Division holds, Bernstein v. Beth Israel Hospital, 205 App. Div. 419, 199 N. Y. Supp. 740, that a hospital intern is an "employee" of the hospital, within the State workmen's compensation act, and not an independent contractor. "Because the claimant was a physician," the court said, "he was not precluded from hiring to the hospital as an employee. He was hired for two years, and as compensation received his room, board, laundry work, and three uniforms a year—conceded to be of the value of $25 a week. If he failed in the performance of the duties assigned to him by reason of incompetence, or otherwise, he could be discharged." The decision for affirmance of the award to the claimant, injured by "infection and lymphangitis," was by a court divided three to two. The dissenting judges relied on Schloendorff v. New York Hospital, 211 N. Y. 125, 105 N. E. 92, wherein it was said: "The relation between a hospital and its physician is not that of master and servant. The hospital does not undertake to act through them, but merely to procure them to act, upon their own responsibility." Although the hospital had the power to discharge the claimant, the dissenting opinion said: "He was not a wage earner, but received his board, room, uniforms and laundry service as a concession to him, arising out of the necessity of his being constantly at hand under the rules applicable to his particular appointment."

EXPERT MEDICAL OPINIONS HELD TO SUPPORT FINDING AS TO COMPENSATION DISABILITY.

An appeal from an award under the Alabama workmen's compensation act, the claimant contended that the trial court erred in holding that fifty per cent disability to one eye was all the employer should be responsibile for, and complained that this finding was based upon the opinion of medical experts, which, according to the claimant's testimony, did him injustice as minimizing his injury.

Several medical men testified as to the impairment of the plaintiff's vision. Their opinions were based upon personal examinations of plaintiff and his statements made in response to the tests applied by them for the ascertainment of the facts at a time and under circumstances excluding every possible motive for misstatement. The Alabama Supreme Court considered that the depositions of these experts were far from evidencing mere "theories," and that no better evidence of the facts could be adduced. The consensus of the expert medical opinions, thus arrived at, was held to support the opinion of the trial court. Shaw v. Tennessee Coal, Iron & R. Co. (Ala.), 97 So. 694.

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A Clinical Study of Pancreatitis*

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By the character of the lesions of an organ given the most prominence in the average textbook, one is able to estimate fairly accurately the state of the medical knowledge regarding that organ, for the less we know of it the greater is the emphasis placed on its gross fulminating disease. The most notable example of this manifestation of ignorance even today is probably the pancreas, for little or no attempt is made to suggest means of diagnosing the common, milder lesions of this organ. It is extremely unfortunate that the emphasis is mostly placed on tumors large enough to cause obstruction of the bile duct, on acute hemorrhagic disease, and on desquamative processes, advanced enough to cause diabetes.

Until after the middle of the last century the functions and significance of the pancreas were almost neglected, but after the work of von Behring and Minkowski in 1889 demonstrating that extirpation of the organ was invariably followed by permanent diabetes, increased interest was shown in the gland, both as an organ of digestion and of metabolic importance. In this connection we must not forget the classical paper of Reginald Heber Fitz, published in the same year. The impetus to the study of the disease of this organ in this country was due to his pioneer work.

Progress, however, has been slow in the clinical recognition of the early changes in the pancreas, because of its situation in the midst of other important structures which mask its symptoms, and because extensive pancreatic destruction may occur before there is interference with function. This ability on the part of the pancreas to carry on its work in the body economy, even when gross lesions are present, is a very important factor to consider. Again, pancreatic derangement is often so closely associated with disease of the surrounding viscera, and the inaugural symptomatology is so evasive, that we are apt to overlook the fact that this organ is the seat of trouble.

The gland lies in the epigastrium, its head enclosed in the loop of the second portion of the duodenum and its tail in contact with the spleen. It thus extends across the spinal column at the level of the first and second lumbar vertebræ and rests upon the vena cava and aorta. The entire organ is retroperitoneal and it is attached to the parts behind it by loose connective tissue. Anteriorly, it is intimately attached to the posterior layer of the lesser peritoneal sac. Surrounding the pancreas is a fibrous sheath, which by its many extensions into the gland divides it into lobules. These lobules drain by small ducts into branches of the main duct—the duct of Wirsung, which descends just in front of the common bile duct to empty, usually with it, into the duodenum at the papilla of Vater. One of the large tributaries from the head, the duct of Santorini, connects with the duct of Wirsung as it turns downward, but in about fifty per cent. of cases it empties independently into the duct about three cm. above and anterior to the papilla, but keeps its connection with the duct of Wirsung. The blood supply is from the splenic, hepatic and superior mesenteric arteries and the venous drainage is all into the portal system. This very abundant arterial supply protects the pancreas against gangrene from occlusion, the necrosis in acute disease being independent of circulatory disturbances.

When we come to consider pancreatic disease in relation to anatomy, the most important items are the relation of the pancreatic duct to the common bile duct; that is to say, the enclosure of the common bile duct by the head of the pancreas, so that hyperplasia, or cicatricial contraction, or neoplasms of the head of the pancreas may obstruct the biliary outflow and give rise to pressure symptoms or even obstruction. The intimate connection of the pancreas to the great solar plexus, through the celiac, superior mesenteric, and splenic plexuses may explain the agonizing pain, the collapse and the frequently associated intestinal paresis in acute pancreatic disease and the close lymphatic connections of the pancreas to the liver, gallbladder, duodenum, and pylorus must always be borne in mind. Of this I shall speak later.

From the viewpoint of diagnosis and treatment the variations of the pancreas are not of great importance. The gland may surround the descending portion of the duodenum, or small accessory pan-

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creatic glands may be found in the walls of the duodenum or the stomach. The former anomaly may result in constriction of the duodenum with obstruction, causing dilatation of the first portion of the duodenum and of the stomach.

The function of the pancreas is two fold, since it has both an internal and an external secretion. It is, as Sweet has said, a "complete selfcontained laboratory of physical chemistry." The internal secretion, the product of the islands of Langerhans, is concerned with the metabolism of carbohydrates and there is, perhaps, another secretion necessary for the absorbing function of the intestine. The external secretion is from the acini of the gland and empties at the papilla of Vater into the second portion of the duodenum. It is the most important of the digestive juices. The digestive activity of the powerful external secretions accounts for the essential feature of pancreatitis in its acute form. Bayliss and Starling have shown that the most powerful stimulant to pancreatic activity is a hormone, which originates in the intestinal mucosa by the action of the hydrochloric acid on a substance called prosecretin, which, becoming secretin, is carried by the blood stream to the pancreas.

Though, embryologically, the islands of Langerhans and the ordinary glandular tissue have their origin in the same entoblastic outgrowths, they apparently have no functional relation; for disease may, and usually does affect one without involving the other. Both are seldom affected except in cases of massive destruction, such as carcinoma or gangrene. This differentiation of function and the atrophy of one portion of the gland without damage to the islands has recently come into prominence through the work of Banting and his associates, in the treatment of diabetes with preparations of the extract of the islands after causing fibrosis of the rest of the pancreas by occlusion of the pancreatic ducts. This work was based on the observation made by many surgeons during the last few years, when they noticed fibrosis of the head of the pancreas following occlusion of the duct by gallstones, or by chronic inflammatory disease. This again illustrates that a knowledge of early or inaugural symptomatology is to be gained by early cooperation between the internist and surgeon and not between the internist and the autopsist, if I may coin the expression.

Until a large portion of the gland is destroyed and almost irreparable damage has been done, the function of the pancreas is not affected to such an extent that can be detected by any of our present methods of examination. However, from routine autopsy findings on individuals dying from all causes chronic pancreatitis is found to be a not uncommon lesion. The disease may be present in all stages from very slight fibrosis to one so extensive as to cause astonishment at the absence of significant symptoms during life, and, if present, the sign boards were certainly not correctly read. In operations on the gallbladder, the bile ducts and the stomach or duodenum, only too frequently the head of the pancreas is definitely indurated, and the surgeon realizes that procrastination in the discovery and removal of a focus of infection has led to a well nigh catastrophic ending. I wish that I might be able to send you all forth as disciples of the surgeon when it comes to interpreting chronic and acute upper abdominal symptomatology. There is only one way to be sure of what lies in the peritoneal cavity. And so, as the surgeon says, when in doubt drain, so I say to you, when in doubt send your cases to the surgeon. Stand at his elbow and have revealed to your own sight that which cannot be seen through the closed abdominal wall.

The close connection between disease of the biliary system and of the pancreas is being more and more emphasized; that is as it should be. If we could flash the picture of chronic pancreatitis before the eyes of every practitioner, who irrigates the duodenum of a patient suffering from gallbladder disease; and if the patient could return from the beyond and point his ghostly finger at his transgressor, perhaps we could look to the future with a greater degree of hope. But when calomel, castor oil, and epsom salts are still so frequently the armamentarium of the practitioner in a case of appendicitis, who fails to realize that purgation spells perforation, the outlook in a disease like pancreatitis is far from consoling and the millenium is indeed far off.

At first it was thought that the relationship between the hardening of the head of the pancreas and occlusion of the bile duct was due to the backing up of infected bile in the pancreatic ducts and to the spread of the infection from the ampulla up the duct to the pancreas. But it has been demonstrated at the Research Laboratory of the University of Pennsylvania that this route, known as Archibald's route, is the rarer method of transmission. The papilla of Vater is not always so arranged that infection can involve the pancreas through the duct of Wirsung. Chronic pancreatitis, therefore, is not due to transitory attacks of limited acute pancreatitis. To me it seems like tempting fate to open an abdomen and tinker with the papilla of Vater when the source of the trouble is easily seen in the open abdomen, usually in the form of an infected gallbladder. I urgently advise the surgeon and internist who cannot see this to consult our common friend, the ophthalmologist.

Chronic pancreatitis is usually limited to the "triangle of pancreatic involvement"—the tissue arising from the ventral anlage. It is extremely difficult to accept the duct theory unless the duct system in these cases fails to anastomose within the gland. Furthermore, what becomes of the organisms in those cases in which it is agreed the bile is definitely infected? On the other hand, the lymphatics of the head of the pancreas, which arise in the neighborhood of the bile duct, are intimately connected with the lymphatics of the lower end of the bile duct, and these in turn are intimately associated with the lymphatic ducts of the gallbladder. Infection of the regional lymph nodes thus can very easily cause a damming back of the lymph and aseptic inflammation of the interstitial pancreatic tissue, with subsequent organization and cicatrization; this, in fact, is the microscopic picture of chronic pancreatic inflammation and which explains the absence of pathogenic organisms.

The question of the pathogenesis of pancreatitis is a very important one. The retrojection of normal bile is, to my mind, never a cause of pan-

creatic disease, and only rarely does the retrojection of infected bile damage the pancreas sufficiently to cause chronic pancreatitis. The direct connection between the lymphatics of the liver, the gallbladder, the pylorus, the duodenum and even the appendix to the peripancreatic lymphatics was demonstrated by Dr. Pfeiffer and myself some years ago. The external evidence of such a close relationship can often be observed at the operating table in the form of an inflamed lymph node at the neck of the gallbladder, or along the common duct, and palpation of similar glands in the peripancreatic tissues. This is a peripancreatic lymphangitis and lymphadenitis, which is marching on to its deadly end as an interstitial pancreatitis, to prevent which simple cholecystectomy would have been all that was necessary. Later, prolonged drainage, sometimes over a period of months, if not years, will be required and even then the damage done is not entirely reparable. A patient of Dr. Riesman's upon whom I operated wore a T rubber drainage tube in the common duct four years.

From the foregoing remarks, it is evident that chronic pancreatitis per se is not easily diagnosed. The symptoms are usually those associated with the bile passages.

In the cases not associated with gallstones, the symptoms in about one third of the cases are those of cholecystitis, consisting of recurrent attacks of acute pain in the epigastrium and the right costal margin (occasionally the pain is in the left costal margin, the lumbar region, and possibly also all over the abdomen). Pain sometimes is referred to the right shoulder and back, but referred pain is not as frequent as when gallstones are present. Jaundice, flatulency, and vomiting form part of the picture and there is nearly always a history, more or less prolonged, of indigestion. In the intervals between attacks the majority of patients show subnormal acidity, and occasionally (in about seven per cent.) there is a glycosuria.

The jaundice is nearly always due to an associated lesion of the bile passages. But it may be caused by obstruction of the common bile duct by direct pressure from enlargement of the part of the pancreas which surounds the duct. Not rarely the jaundice in cases of enlargement and hardening of the gland is relieved by draining the gallbladder, or by a cholecystoduodenostomy. There is generally tenderness at the site of the most intense pain—usually the right costal margin. The pancreas can rarely be palpated.

The various functional tests are of value as suggestive or confirmatory evidence, but in the last analysis the diagnosis of chronic pancreatitis rests on the history and the clinical signs, but in the majority of cases can be made only by exploration. Carcinoma of the head of the pancreas is but one stage further in the progression of chronic pancreatitis. Inflammation spells irritation and irritation too often spells malignant degeneration. Fortunately, malignant degeneration of the pancreas is not very common for, unfortunately, we are not in a position to make the diagnosis clinically or even always able to make it at the operating table. Removal of a specimen of pancreatic tissue for frozen section diagnosis is too risky. In doubtful cases, all we can do is to give the patient the benefit of the doubt by establishing bile drainage either externally, or into the duodenum, the stomach or intestine.

The most important thing in chronic pancreatitis is prophylaxis, by early treatment of disease of the upper abdomen with which it is nearly always associated, and which leads to the chronic changes in the gallbladder. It may be all right to begin with medical treatment, but, if the condition fails to yield promptly, early operation is important in view of the irreparable damage that may take place.

While, for a body of internists, the chronic disease holds the greater interest, a few words on acute pancreatitis are certainly in order.

It is erroneous to believe that acute pancreatitis is necessarily associated with fat necrosis and hemorrhage, for experience has shown that it may occur as a simple nonsuppurative inflammation characterized by swelling, edema, and tenderness at the site of the organ. Usually, in this type, the head is the part affected, but the entire organ may also be involved in the process. These noninflammatory cases are sometimes described as pancreatic apoplexy. They are almost invariably associated with disease of the gallbladder, with or without calculi, or, possibly, the duodenum. While these observations may indicate a duct borne infection, there is little doubt that in the majority of cases the infection travels by way of the lymph channels.

Within the past decade there has been a marked increase in the number of reported cases of acute pancreatitis, so that the syndrome is becoming somewhat more familiar to the internist. But a correct preoperative diagnosis of acute pancreatitis is probably more rarely made than of the other acute abdominal disorders. First of all, it is not frequent, and outside of its exaggerated character, there is no one definite pathognomonic sign or symptom. Furthermore, it is nearly always associated with other severe abdominal lesions and, finally, the condition in the ultra acute case is so desperate that operation is resorted to without the formality of a diagnosis.

Diagnosis is possible if the patient is seen within the first thirty-six to forty-eight hours of the seizure. The onset is sudden, like a thunderbolt from a clear sky; the pain overwhelming, accompanied by persistent vomiting, rapid pulse and signs of collapse, more pronounced than in a perforating viscus. At first the temperature is subnormal and this is often suggestive. But, as the infection spreads, there is the usual rise in pulse and temperature which accompanies toxemia. Neither the abdominal distention nor the rigidity is so pronounced as in the other acute abdominal conditions. In the acute and subacute, as distinguished from the ultra acute case just briefly described, the attack is less dramatic, but demands the same immediate attention, especially because of the more favorable prognosis of operation.

Sometimes these acute cases recover without operation, but those that do would also, no doubt, have recovered if operated upon; while some of those that succumb without surgery might have been saved by early intervention.

I am of the opinion that many of the conditions diagnosed as acute indigestion, angina, etc., where the patient gives the history of having eaten excessively,

is stricken with sharp acute epigastric pain, followed by depression which lasts only for a short time and recovers in a few days, are instances of mild acute pancreatitis. The pathology in these cases is a very slight punctate hemorrhage into the pancreas. In practically all of them, a very careful physical examination and study will reveal, in addition to epigastric fulness, tenderness and often an indistinct palpable mass, a chronically diseased appendix or gallbladder.

The subject of differential diagnosis would take me too far afield, nor is it important in an emergency so definitely surgical.

In conclusion, I wish to impress upon you, if I have not already done so, the fact that pancreatic disease is the result of associations with bad company in the abdominal cavity. The pancreas suffers from continued insults from a diseased appendix, gallbladder, stomach or duodenum. I would, therefore, urge you to lead your patients away from these evil influences by early attention and removal of the primary offenders. The pancreas is a very important organ of digestion and a very essential part of the endocrine system. It is securely lodged within the abdominal cavity and cannot itself be removed. It behooves us, therefore, to give it every possible protection from assault from its neighbors, who so often behave very badly, and who can only be routed out by surgical methods.

1634 WALNUT STREET.

The Relation of Virulence to the Diphtheria Carrier Problem

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To those who rely on the control of diphtheria carriers as the main factor in the prevention of diphtheria, some recent personal observations should prove of value. The present day opinion as to the control of the carrier rests upon the determination of positive virulence. A second generally accepted opinion is that in the localization of the organism, the throat diphtheria carrier dominates the carrier problem.

A review of our previous observations may make possible a better understanding of the observations to be presented and their relation to virulence, as well as to a number of apparently conflicting facts that are on record.

In an article published in 1916 (1), based on two years' experience in the field with this disease, it was shown that there were two types of carriers. One, the pharyngeal, constitutes about one fourth of the total carriers, and in general represents previous cases of the disease. The second type, the nasal, constituting three fourths of the total carriers, were either postconvalescent cases or socalled contact carriers with no record or history of having had the disease. Emphasis was laid on the fact that such nasal carriers presented to the eye a characteristic pathological picture. A second article (2) called attention to the clinical historical fact that nasal diphtheria always followed epidemics of measles and that an inspection of all convalescent cases of measles following an epidemic of the disease yielded nasal diphtheria carriers. Later (3), attention was called to the fact that, following trauma or operative procedures on the nasopharynx, as well as among subjects with septal deformities, nasal diphtheria carriers would come to the attention of the specialist and thus the spread of the disease would be prevented should such specialists investigate pathological nasal discharges. At the time we also emphasized the necessity of searching among contacts for the chronic nasal carrier, at one time a convalescent case, when the carrier who was discovered had never had the disease. We had at that time accumulated the evidence that an apparent immunity of many children in one family was due to multiple nasal carriership. In a subsequent article (4), two fundamentals existing in carriers were described, one relating to deformities of the nasopharynx, and the other relating to race. Predominating among Italians and Russian Jews, by virtue of the first fundamental, there was a practical absence among the Negroes with their racial absence of that fundamental. Other contributing factors were those of climate, dampness and absence of sunshine, and of sudden atmospheric changes as contributed to catarrhal conditions.

Based on the knowledge gained, and faced with an unusual frequency of diphtheria following an epidemic of measles, we recorded the experiences of a survey of upwards of thirty-five thousand school children during two months (5). Two nurses were shown a typical nasal carrier and instructed to search for such cases only. Thirty-four nasal carriers were found by these nurses and during the period twenty-three more nasal carriers were found by the department through school absentees. At this point it may be significant to contrast this survey, yielding two tenths of one per cent. school age population carriership, with the numerous recorded surveys constantly made from throat cultures, yielding anywhere from two per cent. upward similar carriership; and the accompanying observations that only one in ten of such carriers were virulent. We recorded the fact that of 117 carriers of that year (1917), twenty-five per cent. were under the age of five, sixty-three per cent. were between five and ten, ten per cent. were between ten and twenty, and two per cent. were over twenty. The following facts were also recorded: Five per cent. of the carriers were either known previous cases or gave a history of having been previous cases; in four instances a single carrier had made a further nasal carrier and in eight instances a single carrier had made either two or three further nasal carriers; in four instances the carrier was a recent case of measles, in two instances a recent case of grippe, in one instance was

convalescent from whooping cough, and in six instances was a chronic carrier of previous years. In the light of our later experiences, the history of a nasal carrier following measles, apparently infected by his mother during his attack, which gave rise to a case of diphtheria in a younger sister, is recalled as germane to the discussion. At that time we summed up the situation as follows: All individuals with acute catarrhal nasal conditions are potential carriers, needing only the presence of diphtheria bacilli to become specific carriers, their permanency being dependent on the degree of existing nasal obstruction; that individuals convalescent from respiratory diseases constitute the largest percentage of characteristic nasal carriers, and that, in general, cases of the disease followed the production of acute nasal carriers by chronic carriers.

During the past year we have had the advantage of a limited number of virulence tests on carriers. In addition to the investigation of suspicious nasal discharges, we have also investigated, by cultures, enlarged tonsils in convalescent measles as well as in contacts of diphtheria cases and of nasal carriers. With an incidence of 152 cases for the year under our observation, we have a total of 200 carriers. We have grouped in a table the essential features of relationship to virulence. The table follows:

	Kind of Carrier	Total number	Convalescent measles	" scarlet fever	" grippe	" whooping cough	" chickenpox	" case	Following A. and T.	No history obtained
Positive Virulence	Pharyngeal ..	4	1	—	—	—	—	—	—	3
	Nasopharyngeal	4	—	—	—	—	—	1	1	2
	Nasal	23	8	—	1	1	1	1	—	11
Negative Virulence	Pharyngeal ..	2	—	—	—	—	—	—	—	2
	Nasopharyngeal	—	—	—	—	—	—	—	—	—
	Nasal	33	—	—	—	—	—	1	—	32
Virulence Not obtained	Pharyngeal ..	13	—	—	—	—	—	—	—	13
	Nasopharyngeal	—	—	—	—	—	—	—	—	—
	Nasal	121	15	3	1	4	3	—	1	94

Due to the fact that opportunity for obtaining virulence tests was based, until late in the year, on the existence of carriership for upwards of one month, and an excess of eighty per cent. of the carriers were cured within two weeks, the results to be read from the table may seem of small moment of themselves. It will be noted that 88.5 per cent. of the carriers were nasal, two per cent. both nose and throat, and but 9.5 per cent. were pharyngeal. Our previous statistics working mainly on nasal discharges only, or other than among contacts of cases who had recently had sore throats, showed that three fourths of the carriers were nasal. It will further be noted that there is a small yet certain confirmatory evidence to our previous descriptive one, namely, that the clinical evidence of nasal carriers in those convalescent from other children's diseases was an important feature in seeking the characteristic nasal diphtheria carrier.

We are prepared to record the clinical finding that virulent pharyngeal carriers usually give rise to cases only through a third individual, namely, a nasal carrier. Not only does this confirm our previous observation, (*vide* nasal carrier, par. 4), but answers as well the frequently recorded instances of the numbers of virulent pharyngeal carriers found during surveys without actual cases. Interlocking with this point, a further factor that is fundamental becomes an issue. From the point of view of the laboratory, only virulent carriers are to be restrained. If not a convalescent case, said carrier would seem only able to obtain such virulent organisms from contact with an actual case. In the light of our field experience we have not been able to trace such a sequence. We can trace the following sequence. An avirulent organism from the nose or throat of an individual when conveyed to the nose of one ill with any of the usual children's diseases, becomes or may become virulent. Consequent on nasal deformity, the characteristic pathological picture follows. As illustrations we give the following instances.

Case I.—Family W., three children, two females, ages nine and six, one male, aged four. Female aged nine, nonresident during the period sister was ill with chickenpox. On convalescence, the latter was found with purulent, bloody, excoriating, unilateral, nasal discharge of at least a week's duration, while the male aged four had an even more intense, more recent unilateral nasal discharge. There was a positive virulence for the girl and a negative one for the boy. The latter had been for the past two years in a plaster cast for tuberculosis of the spine and had not contracted chickenpox. The source of the organism in the girl was clearly from a playmate of the same age across the street whom we had had under supervision one month previously, neighborhood or school cases of the disease being as definitely ruled out by complete absence.

Case II.—A second was as follows in family C, consisting of males aged nine, six and four, and an infant one month old. Clinical diphtheria was evident in the male aged nine, though initial cultures were negative. Asked to see the case for that reason, characteristic nasal discharges in both of the younger boys were sufficient evidence for immediate quarantine. The nose culture from the boy aged six was negative, while that of the younger brother was positive and a positive virulence was later reported. Copious nasal hemorrhages in the older carrier was evidently the reason for initial negative culture. Convalescent cultures from the case, as well as from this nasal carrier, were positive, in the latter for some two months, as well as in the younger brother. The history was that they had recently moved from another state where both younger boys had had whooping cough. There was satisfactory field evidence that the diphtheria organism had likewise been imported.

Case III.—A third instance was as follows: John M., aged nine, the oldest of a family of four children, was a nasal carrier in 1919 without associated cases in the family or neighborhood. In 1921, at a different address, the family was found with a reported case of diphtheria in Mary, aged nine. John and a brother Hugh, aged six, were nasal carriers at this time. This was the only case of diphtheria in the block during the year. In 1922 at yet another address following the report of a case of diphtheria, male aged four, a brother aged two was an evident recent nasal carrier. One of the other five families

in the house to show carriers, and the only one was the M. family, a recent arrival. Both John and Hugh were again characteristic nasal carriers. Virulence tests showed that neither were virulent. No virulence test was done on the brother of the patient as his carriership cleared within two weeks.

One further established fact merits consideration in this argument. It has been shown that children

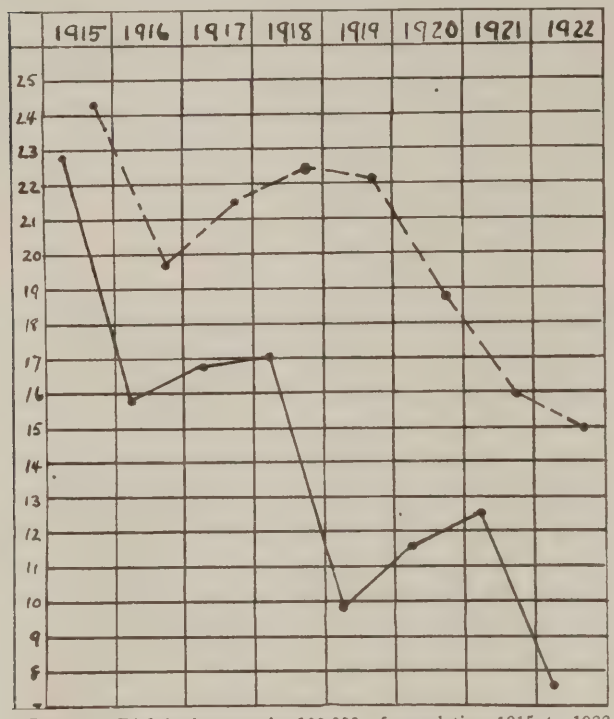

Chart 1.—Diphtheria rates in 100,000 of population 1915 to 1922. Solid line, New Haven, Conn.; broken line, New York City.

previously giving negative Schick reactions have given positive reactions during illnesses from measles, scarlet fever, poliomyelitis, etc. There would result then apparently, the elements for the cyclic frequency of the disease, diphtheria, and of the carriers; specific intercurrent diseases lessening the individual immunity to diphtheria for cases, and enhancing the virulence for carriers.

The logical conclusion from our observations may establish in the minds of many the fact that bacteriological evidence of diphtheria organisms in any individual, even when avirulent, should be a consideration as a source of possible future cases. Such, we believe to be the case under certain conditions. One main condition is that such carriers are frankly nasal and control should be had during the period of nasal discharge. The second essential condition is their control during times of incidence of measles, predominantly, and of operative procedure on the nasopharynx among contacts.

That it is sufficient for the continuation of increasing control of diphtheria, first, to investigate all previous nasal carriers, whether virulent or avirulent, during periods of increased respiratory disturbances (seasonal colds, for example), and, in the second place, to seek among their contacts for cases of convalescent respiratory disturbances and specific communicable diseases as may make virulent carriers in such contacts, would seem evidenced by our mortality rates for the period covered by our methods in contrast with a city where maximal equipment is provided for control of the communicable diseases. Such a city as New York is offered in comparison. The rates inclusive of those of 1920 are from the Census Bureau and for all years include nonresidents. Such a factor is of considerable moment for New Haven, the resident rate for 1922, for example, being 5.3. A graph for mortality rates in 100,000 of population for the past eight years is given in Chart I.

The results possible may be further shown by the morbidity and mortality rates for neighboring cities for the first six months of the year 1923, following the measles frequency of 1922. The statistics are as follows:

MORBIDITY AND MORTALITY RATES FOR DIPHTHERIA, JANUARY 1 TO JUNE 30, 1923, IN 100,000 POPULATION. NONRESIDENTS EXCLUDED

City	U. S. Census Est'd Popu.	Cases	Deaths	Morbidity	Mortality
Bridgeport	143,555	178	19	124	13.2
Hartford	138,036	209	10	144	7.0
New Britain	63,281	104	7	164	11.0
New Haven	172,967	58	1	34	0.6
Waterbury	97,952	143	6	146	6.1
New York City	5,927,617	4,659	349	79	5.9

Examination of the statistics for New Haven give further information. For the past three years a health centre has been in control of a population of 28,606 in 1922. During that year the morbidity and mortality, respectively, for measles for the district was 821.49 and 52.44. The corresponding figures for the remainder of the city under the direct jurisdiction of the Department of Health were 1,155.73 and 12.73. During the first six months of 1923 the health centre recorded sixteen cases of diphtheria with one death, while the remainder of the city recorded forty-two cases and no death. Inasmuch as the morbidity and mortality from diphtheria for the health centre district during the previous ten years has been much less than a slightly larger district of similar race stocks in the remainder of the city, the fact that unreported measles was not sought for and that measles was not used as a basis for obtaining diphtheria carriers, by the health centre, furnish critical data.

SUMMARY

Clinical statistical evidence of the past eight years in the study of diphtheria and the attempt to control it has shown and confirmed the following facts:

1. Pharyngeal cases and carriers of the disease are but slightly communicable compared with nasal carriers. The ratio of type of carriers may be as small as one to nine.

2. There is evidence that virulent nasal carriers, other than convalescent cases, may gain their carriership from avirulent organisms, and, in our experience, usually do gain their carriership in this way rather than from contact with cases.

3. There is evidence that virulent nasal carriers are made during or following the attack of certain specific communicable diseases, from contact individuals, in the main, nasal carriers of avirulent organisms.

4. The cyclic frequency of the disease is apparently referable (historically true as well), to the correlating frequencies of other specific communicable diseases, mainly measles.

The author's references will appear in his reprints.

The One Million Drug Addicts in the United States

A Defense of and Suggestion to the Medical Profession

S. ADOLPHUS KNOPF, M.D.,
New York.

Temperance in all things and the judicious administration of alcohol as a medicine and of opiates to assuage pain have been taught and practised by the medical profession since the time of Hippocrates. The United States Congress, for reasons best known to itself, thought it wise to enact a law to tell the physician what should be the maximum dose of alcohol he might prescribe. The prohibitionists are, of course, pleased and consider this act of Congress a wise measure. But now come the antiprohibitionists to the fore and say, "Because you suppressed the sale of all alcoholic drinks—beer and wine as well as strong liquors—the illicit use of narcotic drugs in the United States has increased 1400 per cent. during the past five years, the number of addicts has grown dangerously, and thus a most serious situation has been created." Whether or not the wets are correct in making this statement is still open to question, for there are competent authorities who maintain that in the sections of the country where prohibition is not strictly enforced there are just as many drug addicts as in places where it is most strictly enforced. Nevertheless, in reply to the assertion of the wets concerning prohibition's responsibility for the drug addiction, the Federal Prohibition Commissioner was quoted in a Washington news dispatch of December 26, 1922, as having said that, while the narcotic evil is always alarming, yet from a careful survey of the situation there seems to be no justification for the reports current as to its seriousness. "Prohibition headquarters," the dispatch further said, "is authority for the statement that estimates by those in close touch with the situation place the total number of addicts in the United States at not more than one million." Not more than one million! One per cent. of the total population of the country—one of every hundred persons in the United States.

I have gleaned these quotations from an article by Clyde Langston Eddy, vice-president of the American Pharmaceutical Association, which appeared in *Current History*, July, 1923, and in abstract form in the *Literary Digest* of August 25. This very illuminating and well written paper contains many accurate and generally known statements about the symptoms of drug addiction, its widespread use, its vast sociological aspects, the unwisdom of some of the antinarcotic laws, and the frequent desire of addicts to be cured, but who must in the meantime procure their narcotics from the dope peddler at exorbitant prices. There is, however, one statement regarding the etiology of drug addiction in which the author of that article is seriously mistaken, and I protest with all the vehemence possible against the assertion that "most persons, excepting, of course, the relatively small number of underworld hangers on, and others who use heroine or cocaine because their associates do, become addicted to the use of narcotic drugs as the result of having morphine or other opiates administered to or prescribed for them by their honest, if insufficiently informed, family physician."

Mr. Eddy quotes one case, that of a woman who had undergone a severe abdominal operation, and as a result had become an addict, and then continues to say that "there are thousands of similar cases. A patient suffering from the aftereffects of an operation, or from the ravages of cancer or tuberculosis, is given morphine over a period of a few weeks or months, and addiction results."

It is amazing that a man, who apparently has had some medical training, can make such a statement and rush into print with it. I have since talked with many colleagues—surgeons, general practitioners, and specialists—and only in the rarest instances could they recall any cases where surgical or medical treatment which cured the patient had resulted in drug addiction. As to the hopelessly ill tuberculous or cancerous patient, doomed to certain death within a short time, it would be cruel indeed to let such an one suffer. Judicious administration of opiates to these patients relieves their sufferings and thereby prolongs their lives at the same time. The great and immortal Osler, who was known as a nihilist as far as medication is concerned, called morphine in case of the hopelessly ill and suffering patient the G. O. M. remedy—"God's Own Medicine."

Surely, Mr. Eddy cannot classify these patients as drug addicts. Since he evidently bases his assertions on statistics, which, however, he does not quote, I may be permitted to quote some authoritative statements to refute the accusation that most persons addicted to the use of narcotic drugs owe their misfortune to their family physicians.

DRUG ADDICTION IN NEW YORK

In an interesting pamphlet by Dr. Carleton Simon, Special Deputy Police Commissioner of New York City, we read: "Less than two per cent. of five thousand addicts arrested by us in New York City were able to trace their drug addiction to having been acquired as a result of medical or surgical treatment; ninety-eight per cent. frankly confessed that their narcotic drug addiction was due either to bad environment, vicious influences, or criminal associations." The commissioner then continues by saying: "The statistics of our intensive campaign against this menace in the city of New York show that sixty-five per cent. of those arrested had a record on file in the Criminal Identification Bureau of the New York Police Department."

Some years ago, when beside my tuberculosis service at the Riverside Hospital there was established a service for the treatment of drug addicts, some committed there by police judges and some who had come by their own desire to be treated, my colleague, Dr. Thomas F. Joyce, was put in charge

of that division. From my own observation and inquiries, and from many a consultation with Dr. Joyce, I gained the impression that our profession was only responsible for drug addiction in the rarest instances. Dr. Joyce, whom I recently asked to give his authoritative opinion once more, wrote me as follows: "In the seven thousand cases that were under my personal supervision at the Workhouse Hospital and at the Riverside Hospital, during the examinations made by me for the etiological factors that led to their addiction, not more than a dozen patients attributed their habit to the injudicious use of narcotic drugs prescribed or administered by the physicians."

STARTING THE HABIT

Finally, I should like to quote from another admirable and instructive article on drug addiction by Dr. W. A. Bloedorn, which appeared in the last August issue of *Hygiea:* "The number of persons who begin the use of drugs through illness, insomnia, or persistent pain, while constituting a large aggregate, is believed to form a relatively small percentage of the total." In charging the regular medical profession with being responsible for the spread of drug addiction, I wonder if Mr. Eddy took into consideration the existence of the numerous cults in the name of which thousands of men and women are practising medicine, assuming the title of doctor.

The majority of the laity make no distinction between an M.D., representing regular medicine, and an irregular D. with all sorts of letters preceding it, indicating the particular cult practised. To the average individual such a person is a doctor. If this irregular practitioner wants to give prescriptions, including narcotics, all he has to do is to have some prescription blanks printed with the heading "Doctor So and So," his telephone number and any number he wishes to give after the letters "U.S.I.R.," and any druggist will fill his prescription for heroine, morphine, or cocaine. These irregular practitioners are rarely familiar with the science of materia medica and knowing little of indications, contraindications, or doses of habit forming narcotics, are without doubt responsible for not a few cases of drug addiction.

FAKE PHYSICIANS

Perhaps a serious source of drug addiction among the masses may come from the large number of individuals who have procured their medical diplomas fraudulently. Concerning this matter, the *Medical Times,* of January, 1924, very justly says in an editorial:

"Perhaps the worst phase of the fake medical diploma scandal is the part played by the graduates in the booze and dope situation. An M.D. who has purchased his credentials may be depended upon to engage in the liquor and drug traffic; he must be an essential accessory in this industry. Such activities probably overshadow his doings as a practitioner in the ordinary sense, and are presumably the prime reason why he seeks his bogus status."

So much for Mr. Eddy's charges against the medical profession as being responsible for the majority of our one million drug addicts, which he would place at an even greater number. Under the caption of Drug Takers in Every Walk of Life, Mr. Eddy maintains that "from one to four per cent. of all the people in the United States are addicted to the use of narcotic drugs." This would mean that from 1,100,000 to 4,400,000 morphine, heroine or cocaine habitues are constantly with us.

SUBJECT OF DRUG ADDICTION NEGLECTED IN MEDICAL SCHOOLS

I cannot refute Mr. Eddy's charges that in our medical schools the subject of drug addiction does not receive sufficient consideration. He quotes the information obtained from letters of inquiry sent out by a member of the Committee on Habit Forming Drugs of the American Public Health Association, as follows: "Of the eighty-five institutions, thirty-seven, or forty-three per cent., replied.

Among these replies were included the leading schools of the country. A brief review of the data so obtained indicates that the time devoted to the physiological, clinical, and therapeutic consideration of opiate addiction averaged about two hours, and that in several institutions the subject was not considered at all. In twenty-five of these schools the subject was taken up only under materia medica or therapeutics in the second year's course, and in nine schools, under the consideration of nervous and mental diseases. Clinical material was almost entirely lacking, none at all being available in thirteen of these schools, while in the others the replies stated that opportunities to observe cases were rare, infrequent, or limited to an occasional case seen in the insane asylums or jails. The textbooks used were, with but one exception, those which teach the old habit and vice theories, and in which treatment is confined to routine procedures and specific formulas. None of the more recent experimental or clinical work was mentioned. It is little wonder, therefore, that only 425 public health officials informed the Treasury Department recently that the physicians in their communities regarded addiction as a disease, while 542 of them reported that the medical men in their districts still looked upon it as a vice."

Let us, as a profession, honestly admit our shortcomings in this respect. Let our professors of materia medica in undergraduate schools devote more time and attention to the subject of drug addiction and have their theoretical teaching supplemented by a number of clinics where the students may learn all that is known of the etiology, symptomatology, and treatment of this disease; for drug addiction is a distinct disease and modern medicine recognizes the fact in all its bearings.

GOVERNMENT CONTROL

I cannot deal here in detail with the international and federal aspect of the problem. All I can do is to express the ardent hope that every civilized government will soon see to it that production, importation, and exportation of these drugs will be limited to actual medical needs. It is amazing to think that, according to statistics compiled during the year 1919, not less than 563,000 pounds of opium was imported, enough to feed each one of the entire population in this country forty grains. Deducting the fractional amount used for medical purposes, these figures give a fair idea of what is consumed by the one million addicts.

IMMIGRANT DRUG USERS

In a recent article in the *New York American*, the Hon. Frederick A. Wallis, Commissioner of Correction, advocates the exclusion of immigrants who are drug addicts, and quotes the latest statistics of other countries as compared with ours. The annual per capita consumption of opium in Italy is one grain; in Germany two grains; in England three grains; in France four grains. It is appalling to think that in the United States ten times as much is consumed as in France, which is the greatest opium consuming country in Europe, and this in spite of the fact that we do not cultivate the poppy plant nor the coca leaf for the production of narcotics. Commissioner Wallis is right when he said: "Drug addiction is eating at the very vitals of the nation. The congressional committee appointed to investigate the narcotic problem estimated that the number of drug addicts in the United States exceeded 1,990,000, or two per cent. of the population, four per cent. of the adults.

In a personal letter to me, Dr. Lambert writes: "What the big manufacturing druggists are doing, and where they are disposing of the enormous amounts (five hundred thousand pounds of opium a year) that are coming in, I do not know, nor does any one seem able to trace it, and Mr. Eddy's article is in my opinion a deliberate endeavor to throw the responsibility of the large number of addicts in the country on to the medical profession, instead of where it belongs, on the drug business."

The problem of the criminal addict has been admirably dealt with in Commissioner Simon's pamphlet referred to above. One of his most valuable suggestions is to the effect that each municipality should take care of its own addicts, index its narcotic criminals, and force them to take the cure, and also create an intercity identification bureau.

SOCIAL ASPECT

Mr. Eddy's article in *Current History*, as well as Dr. Joyce's paper on Denarcotizing the Addict, throw much light on the problem in its social, criminal, and general aspects. Interesting to the police and social workers, and in a measure also to the medical profession, is Mr. Eddy's deduction that upon the basis of the State Food and Drug Commission's calculation, in one of the States having stringent antinarcotic laws, the addicts of the country annually pay over $60,000,000 to be free from the dreaded withdrawal symptoms, most of this money going of necessity into the hands of illicit dealers, to whose financial advantage it is not only to exploit those who are already addicted, but constantly to create new addicts. Concerning these matters, what interests us, as physicians, now is particularly the etiology, prophylaxis, and treatment. If it is true that the habitual criminal is a product of environment plus mental pathology, then, as Commissioner Simon says, "it is doubly true of the narcotic criminal." Let us find means to discover the child, adolescent, or adult with a mental pathology, cure the curable and confine the incurable, or place him where the possibility of his obtaining the drug is entirely removed. We are advocating at present a universal annual physical examination of every man, woman, and child in the country. What an opportunity this would be to discover the mentally deficient! If our social workers could cooperate in such cases where home environment evidently needs to be investigated and improved, much good would be accomplished by preventive work. Drug addiction, too, may be discovered by this annual examination and when discovered properly dealt with.

RESPONSIBILITY OF THE PHYSICIAN

That physicians are rarely responsible for an individual contracting the drug habit, I have already endeavored to prove by quoting competent authorities who have made a special study of the etiology of thousands of cases. I shall now call attention to one fact which was evidently overlooked by Mr. Eddy in the reasearches which led him to accuse physicians of being responsible for the prevalence of narcotic addiction. There is not a single case on record in the New York Police Department where an arrested opium smoker admitted that the physician was responsible for his addiction. At my request, Commissioner Simon kindly looked up the records of his department for two and a half years. These records show that seven hundred opium smokers were arrested during that time and that all gave the cause of their addiction as bad association.

ADDICTION AMONG VETERANS

Against the specific accusation which Mr. Eddy makes by saying "Not a few veterans of the recent war are confirmed opiate addicts as the result of having morphine administered to them while recovering from painful wounds," I can speak from nearly two years of postwar work, which I was privileged to do in the former U. S. Public Health Service Hospital, later the U. S. War Veterans Hospital No. 61, at Fox Hills, S. I. Among the thousands of veterans sick and wounded who passed through and were treated at that hospital, it was a rare occurrence to find a confirmed drug addict who had become so as a result of treatment for his wounds or illness in military hospitals. The Surgeon Generals of the three services—War, Navy, and Public Health—are wide awake to the danger of drug addiction among their wards, and as one single instance concerning my own service I may mention that heroine, though in minute doses considered a valuable cough remedy, was not allowed to be dispensed in the service. Isolated cases where an exsoldier had been induced by dope peddlers to acquire the habit were of course found from time to time, but the dope peddler who is caught in the barracks or in the military or war veterans' hospital does not fare well, and our Veterans' Bureau is particularly watchful in this respect. General Frank T. Hines, director of the bureau, recently instructed all employees of the U. S. Veterans' Bureau to give every assistance to the narcotic forces of the government in running down members of the "dope" gangs who are living on the compensation received by disabled exservice men. All this shows, as has been said above, that the medical profession at large cannot possibly be held responsible for the existence of the alarming narcotic problem.

ADDICTION IN PRIVATE PRACTICE

Even if in exclusive consultation work or private practice, where one sees only the rich or socalled

better class of narcotic patients, the percentage of addicts blaming a physician for their misfortune is much higher than in public hospitals or penal institutions, the statements of those patients should be taken *cum grano salis*. Those aristocratic addicts will never admit association with the underworld or a *blasé* desire for new excitement as having been the true etiological factor in their acquisition of the habit. There may be, and there doubtless are, cases here and there where careless prescribing is responsible for an acquired addiction, but they represent an infinitesimal proportion of the existing number.

In order to keep our good record as military and civilian physicians let us continue to be careful and be even more careful, until not even one case can be in any way attributed to our prescriptions.

That education in our medical schools is urgently needed, I have already admitted and pointed out how it may be accomplished. Mr. Eddy is right when he says: "What is needed is an educational campaign that would reach police officers, judges, and magistrates, public health officials, professional reformers, members of legislative bodies and—ourselves." Mr. Eddy has, however, forgotten to mention a constituent of young people who need educational warning. It is well known that "dope bootleggers," as they are called, make it a point to create the nefarious habit among high school boys and girls, and even smaller children, in order to develop customers. This is done by mixing heroine or morphine with candy which is then sold in stores in the neighborhood of schools. There should be regular talks on the subject by competent teachers to warn our children of this danger. Even if it should not beset them now, the knowledge thus gained may mean a young man or woman saved from the habit later on. I have also wondered if such lectures in our prisons and reformatories would not be of great benefit in the prevention of drug addiction.

To come again to the education of physicians and fitting ourselves to help cope with this stupendous problem, besides instructing our students in all the medical schools what we know about this disease, let us also institute postgraduate courses where the same subject should be taught to the general practitioner. There is no question that this disease can be treated and successfully treated; not easily cured, I admit, and from my personal observation at Riverside, I am willing to subscribe at least in part to what Dr. Joyce said in a paper recently read before the New York Riverside Hospital Medical Society: "While the Health Department is in possession of hundreds of letters from grateful people who were apparently rescued from the pangs of drug addiction, I still insist that if there is any more destructive, more troublesome, more nervewrecking, more ungrateful class of patients to those intrusted with their care in our hospitals, we have not as yet met them." I know that when Dr. Joyce wrote this he had mostly in mind the rather undesirable class he met at Riverside and the Workhouse Hospital. Every physician who has had any experience at all with drug addicts will admit that there is also a better class of patients, a higher type of unfortunates, eager to be cured; and every narcotic addict who has a strong desire to be cured can be cured.

Unfortunately, there exists a relatively large number of unscrupulous concerns, sometimes presided over by physicians with diplomas, who promise sure cures in their institutions in an incredibly short time but who will retain the patient in their clutches as long as he has any money, doing him little if any good and working all the time only for their own financial gain. Again, "sure cure" remedies are advertised for sale for which the addict pays a high price but which prove to be worthless, if not harmful. The American Medical Association has a special research bureau to investigate all such frauds and frequently publishes scathing exposures of such socalled cures. The greater the publicity which is given to these fraudulent cures, the sooner will they be put out of business. Unfortunately, because the addict fears publicity, these criminal enterprises can but rarely be apprehended and prosecuted.

EXPERT MANAGEMENT OF DRUG ADDICTION

There are well qualified experts in this country, experienced in the treatment and management of drug addicts, who stand high in the profession. Rupert Blue, formerly Surgeon General of the United States Public Health Service; Senator Royal S. Copeland; Dr. Thomas F. Joyce, of the New York City Health Department; Professor Alexander Lambert, of Cornell University; Dr. Carlton Simon, Deputy Commissioner of Police, New York City; Professor William H. Welch, dean of the School of Hygiene, Johns Hopkins University; Dr. Butler, of the Shreveport Clinic, Louisiana; Dr. M. S. Gregory, director of the psychopatic division, Bellevue Hospital; Dr. O'Connor, chief surgeon, New York Department of Correction; Dr. Sherman, Kings County Hospital, New York; Hon. Augustine J. Smith, Deputy Commissioner of Public Welfare, New York City; Hon. Frederick A. Wallis, Commissioner of Correction, New York City, are some of them. The physicians among these men have treated many patients and are treating them successfully and lastingly. That there have been and will be relapses, and perhaps many more than are generally known, must be freely admitted; that there are many narcotic addicts who do not even care to become cured, is also true. Should we despair on that account? We have relapses in cancer, tuberculosis, mental and nervous diseases, and we have hopeless cases, but we continue our researches in all these diseases and do what we can for the patient, whether an original or relapsed case.

Even in the attempt to cure and redeem the addict having criminal record, we should not despair. Let us have the right conception of these socalled criminals. It is true that there are many criminals who easily became drug addicts because of being psychically inferior and mentally defective, and if they have become chronic criminals and chronic narcotic addicts, they should be chronically confined where they can no longer be a menace to society. But among the existing addicts there are also men and women who had high ideals and moral principles before they became addicts and who still have these ideals when their craving is satisfied. They forget all shame and honor when suddenly deprived of their opiates, and are ready then to lie, to steal, or to do worse things to get the means to procure the wanted drug; but they are not inherently liars

or thieves. Dr. Bloedorn puts it tersely in the article in *Hygiea* mentioned above, when he says: "The addict is not an addict because he has criminal tendencies; he develops criminal tendencies because he is an addict." The devotees of medical science have never been nor will ever be without mercy. In treating the addict who is also a criminal, justice, mercy and science must be combined. For the inducer, the peddler, the maker of addicts, the penalty should be severe enough to stop his nefarious trade forever.

There are certainly not a million diabetics in this country, and yet with what justifiable joy did we not greet the great discovery of Banting and how eager are the medical centres to teach the administration of insulin! Courses are offered to the general practitioner for acquiring the latest knowledge on the treatment of diabetes millitus by means of dietary regulation and the use of insulin.

DRUG ADDICTION COMMISSION

Why can not something similar be done on behalf of the one million or more drug addicts? The law which forbids the private practitioner to treat the drug addicts for a longer period than thirty days, and only permits continuous treatment in special institutions, is absurd, at least at the present time, in view of the large number of addicts and the small number of institutions. Granted even that Commissioner Simon's statement that sixty five per cent. of those arrested as drug addicts had a record on file in the Criminal Identification Bureau of the New York Police Department, should not be applicable to the entire country, the problem is nevertheless a criminal and social one, as well as it is a medical problem, and, by its vast distribution, not a local, state, or national, but an international problem.

In addition to the suggestion mentioned above, to appoint a commission to outline the best possible treatment for the narcotic addict and to deal with the problem of the cause and prevention, etc., I would make the following additional suggestion so as to avoid the possibility of even only an occasional unscrupulous physician abusing and violating his privilege by prescribing for drug addicts for financial gain. The commission should be authorized to grant special licenses only to such physicians who have, by their studies and experience, proved themselves to be competent to treat drug addicts. These physicians should be obliged to keep careful records of their narcotic cases and their methods of treatment, and the records should be subject to examination by the commission referred to. The county medical societies are perhaps best qualified to designate the men who by reason of their reputation and learning should be recommended to the commission as especially equipped for the treatment of drug addicts.

What an opportunity for our government or our great benefactors, the Rockefellers and other philanthropists, to be helpful in this work by giving financial aid in creating such a commission and such urgently needed courses in the best and most approved methods of treatment of narcotic addicts. Of course, there probably will have to be created many more institutions for temporary voluntary or compulsory confinement. Research bureaus and laboratories will also be necessary. The urgent need of an energetic combat of the problem in all its aspects is obvious.

INTERNATIONAL ASPECTS

Concerning the international aspect there seems to be hope now for serious work. To judge from a recent *News Bulletin* of the Foreign Policy Association, the opium question has made definite progress by the action taken by the League of Nations Assembly. In July there was some question as to the unanimous acceptance by the Council of the recommendations of the Advisory Committee on Opium. However, the Assembly has adopted the report and resolutions and has asked the Council to put them into effect. Two conferences are provided for by these resolutions:

First: A conference of governments in whose territories the smoking of opium temporarily continues, and the government of China.

Second: A conference of the governments concerned "to be held immediately after the first conference to give effect to principles submitted by representatives of the United States and adopted by the League with reference to the limitations of the amounts of raw opium and coca leaf to be imported for manufacture and for other medical and scientific purposes."

It is selfevident that the limitation of the output of habit forming drugs must be a matter of international cooperation. The *New York Medical Week*, January 5, 1924, puts the situation tersely in the following words:

"It is of no use for one country to control the manufacture of narcotics by its nationals if the illicit trade can be fed by the smuggled in surpluses of unrestricted regions. There is no doubt that narcotic drug addiction thrives on the growth and production of enormous quantities of these drugs over and above medical needs. While the revenue from this industry may amount to huge figures, the cost to civilization in social wreckage more than outweighs the monetary gains. The League of Nations is the logical agency through which to arrive at the needed international regulation of habit forming drugs."

In these international conferences the United States should take a bolder attitude and announce a policy of full cooperation in maintaining and operating the only international machinery for this purpose now in existence. In my opinion one or two of our leading medical men representing the physicians of this country should be sent to that conference, besides the federal representatives already there. Our profession, which is unjustly accused of fathering the narcotic problem, should be the first among those who are eager to combat it.

AN ALARMING SITUATION

Over a million drug addicts, many of whom are already confirmed criminals, in a population of one hundred and ten million is a fearfully dangerous and alarming situation. It will require the combined action of wise governments, enacting and enforcing rational antinarcotic laws, well trained physicians and experienced social workers, numerous special and well supervised institutions for the sanatorium treatment, large hearted philanthropists who will help to defray the expenses of so vast an undertaking, and lastly, but above all, education of all the people to the fearful consequences of drug addiction.

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Hiccough*

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Hiccough is a symptom which may vary in degree from a slight, transitory, to a severe and at times, grave type. The underlying cause of this affection may be a trivial disturbance amenable to the simplest treatment, or, on the other hand, it may be due to the gravest form of organic disease, which, notwithstanding the most intensive and prolonged treatment, terminates in death.

Hiccough is manifested as a sound caused by a clonic spasm of the diaphragm producing a sudden inspiratory movement with closure of the glottis, which thus acts as a hindrance to the entrance of air to complete the vacuum produced by the rapid lowering of this muscle. Normally, the diaphragm and the abductors of the cord contract simultaneously, so that the aperture of the glottis widens as the air enters the chest; but when hiccough occurs with the clonic spasm of the diaphragm, there is no associated separation of the cords; in consequence of which the inrush of air against the partly closed glottis is prevented, giving rise to the well recognized sound to which allusion has been made.

The nervous mechanism entering into the production of hiccough is extremely complex; therefore, it will be best to consider hiccough as a type of modified respiration occasioned by irritations in the course of the vagus nerve. The vagus, through its origin in the medulla oblongata, has autonomous control over certain vital functions, chief among them being those of respiration, cardiac activity, ingestion, deglutition and digestion of food, circulation, metabolism and secretion.

The most frequent site of irritation of the vagus nerves is in the gastrointestinal tract. The nerves, upon being irritated, send out sensory impulses to the medullary centres, where they are reflexly transferred by way of the phrenics to the diaphragm.

Regarding hiccough as a modified type of respiration, it will be well to consider certain functions of normal respiration, as to the part played by the correlating centre in the medulla.

1. The muscle most active in the respiratory mechanism is the diaphragm, which is supplied, chiefly, by the phrenic nerve, the latter arising in the third, fourth and fifth cervical segments of the spinal cord.

2. The ordinary accessory groups, the external intercostal muscles and the intercartilaginous muscles, supplied by the first to twelfth thoracic nerves.

3. Extraordinary accessory groups, the long and short elevator of the muscles of the ribs, supplied by the dorsal branches of the intercostal nerves.

4. In deep expiration the abdominal muscles take part by compressing the abdomen. These are supplied by the eighth to twelfth thoracic nerves. It is probably that in extreme emergency few muscles of the body are exempt from respiratory effort.

5. There are certain muscular groups to serve to assist the respiratory act by increasing the capacity of the passages admitting the air. Depressors of the larynx, sternohyoid and sternothyroid muscles, supplied by the descendens hypoglossi nerve. The muscles separating the vocal cords, as the cricoarytenoid posterior and the thyroarytenoid, supplied by the recurrent laryngeal nerve, a branch of the vagus.

6. The depressors of the lower jaw, supplied by the hypoglossal nerve and pharyngeal plexus.

7. The levator palati, supplied by the pharyngeal plexus.

8. The azygos uvulæ, supplied by the pharyngeal plexus.

9. The dilator narium anterior and posterior, supplied by the facial.

10. The levator alæ nasi, supplied by the facial nerve (1).

The fact that so large a group of muscles may come into action to meet the requirement of respiration will give some conception of the diversified factors that may enter into the production of hiccough and the necessity of some coordinating centre which shall have control over the entire musculature, so that under extreme conditions, we may make use of these muscles in a most effective manner to meet the requirements of respiration.

It is the consensus of opinion that the respiratory nucleus is situated in the medulla oblongata in the gray portion of the reticular formation. Edinger states that this area is made up of bundles of fibres regarded as association cells. They possess short axons, which serve to bind different levels of the medulla to each other and therefore constitute association fibres. Probably the combined and harmonious activity exhibited by the nuclei of the vagus, facial and phrenic nerves in the process of respiration is established by these fibres, which have definite control over all impulses, influencing the principal and accessory muscular mechanisms of respiration, which are ultimately delivered to the coordinating nucleus of the medulla oblongata.

Not only does this nucleus come under the immediate influence of the reflex activity, but also is controlled from the cerebral cortex by voluntary impulses. By its connections sensory elements of the cranial nerves, it responds to stimuli received by the receptors in the mouth, pharynx, larynx, and lung, as well as in the nasal passages. There is probably also some cutaneous sensory connections with this centre as is evidenced by the effect on respiration of pain or extremes in heat or cold.

The chief source of stimulation of the respiratory centre in the medulla oblongata is the venosity of

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the blood. The greater the venosity of the blood, the greater the stimulation of the respiratory centre. Certain products of metabolism seem to activate this centre, as is evidenced by yawning in fatigue, etc. There is a possibility that certain toxic products of metabolism, or from microorganisms in this way, produce hiccough by direct action on the respiratory centre.

Upon physiological basis, Knapp (2) assumes a cortical centre for diaphragmatic movements inasmuch as, clinically, an irritation of the diaphragmatic centre in one hemisphere produces bilateral symmetrical diaphragmatic contraction. He states that the cortical centre for the diaphragm lies in the upper half of the foot of the second frontal convolution in front of the lower part of the leg centre and centre for shoulder movements; close to the centre for the abdominal muscles and, according to Becterew, in the region of the respiratory centre.

Modifications of respiration in laughing and crying, which result from excitation of the higher centres, particularly those that have to do with the emotions, would lead to the belief that some of the cases of socalled psychic or hysterical hiccough may be due to overstimulation of these centres.

The reflex respiratory act in which stimulation of the olfactory nerve causes temporary cessation of respiration is well known. Sudden unexpected sounds, producing stimulation through the eighth nerve, probably in conjunction with the emotional psychic centres, produce a similar result.

The number of spasmodic contractions of the diaphragm occurring in this condition may vary from one to twenty a minute, though occasionally they may reach a far higher number, occurring not only by day, but also during sleep, producing exhaustion and pain in the region of the diaphragm and at times interfering with the respirations and with deglutition.

ETIOLOGY

Varied factors enter into the etiology of hiccough. They may be classified under the following headings:

1. Neurotic and unknown causes.
2. Reflex.
3. Infectious and toxic.
4. Affections of the thoracic viscera.
5. Affections of the abdominal viscera.
6. Cerebrospinal and other organic nervous diseases.

1. *Neurotic and Unknown Causes.*—Under this heading may be classified a large group of cases, the origin of which is unknown, developing without apparent cause; as well as those cases observed so frequently in hysterical and neurotic individuals, following excitement, worry and sudden fear. We are reminded of a young woman, nineteen years of age, of a rather hysterical type, who, while on shipboard during a period of danger from fog, developed an incessant hiccough, which persisted day and night for a period of two weeks and then disappeared suddenly without cause. Bassler has also classified under the head of a pure neurosis a form of singultus associated with hyperesthesia of the stomach, or with gastralgia.

2. *Reflex Causes.*—Reflex causes are important factors in the production of hiccough. Such conditions may be brought about by exposure to wet and cold, though it is possible that under these conditions a neuritis of the phrenic nerve may be the primary factor. This affection may also be occasioned by food ingested at too high or too low a temperature or too highly seasoned. It may occur as a result of shock from operation even though the abdomen itself has not been involved, as one not infrequently observes hiccough following operation or instrumentation on the male genital organs. It is frequently noted in the early stages of coryza and not uncommonly as a result of intestinal parasites.

3. *Infections and Toxic Causes.*—Infections and intoxications play an important rôle in the production of hiccough. Of the infections in which this condition is not uncommonly observed, the following may be noted: septicemia, influenza, pneumonia, typhoid fever, relapsing fever, cholera, severe forms of malaria, and acute rheumatic fever. When singultus occurs in septicemia, it is a serious omen and is not uncommonly indicative of a fatal outcome.

It is not infrequently noted in influenza and in our experience occurred in two forms in association with the recent epidemic; first, during the acute stages of the disease, accompanied by a congestion of the respiratory tract and with an intense bronchitis, subsiding with the disappearance of the inflammatory affection, and second, following recovery, not uncommonly in individuals apparently in good health.

The two following cases occurring in our experience briefly illustrate the two forms:

Case I.—T. J., aged forty-three years, male, who had always enjoyed good health, was suddenly attacked with chills, pain in the chest and fever, during the epidemic of influenza of two years ago. The patient became prostrated and weak, with a temperature of from 101° to 102.5°; pulse 90 to 110 a minute, and respirations 24 to 28 a minute, for a period of nearly three weeks. During this period there were definite evidences of areas of bronchopneumonia in both the right and left chest. After the first week hiccough began occasionally to manifest itself, gradually increasing in number and intensity so that for the remaining two weeks during which fever was still present, it was almost incessant both day and night, not being materially influenced by any remedy; however, as soon as the fever had subsided, it disappeared permanently. It is quite possible that the associated toxemia played the rôle of causative factor in this case.

Case II.—In the second case, the patient, W. M., male, aged fifty-eight years, six weeks previous to his present affection had had a moderately severe attack of influenza without serious complications. Without a known cause, during an epidemic of hiccough in the locality, he began with a moderate attack of this affection, which gradually increased to a severe degree, being present both day and night. A careful examination produced no apparent cause for this condition, the patient meantime revealing signs of weakness and exhaustion and it was only following a hospital treatment of three weeks, during which all the usual remedies were employed, that this condition subsided. The patient has since remained well.

Epidemic hiccough has been produced experimentally by Rosenow by injection into the cerebrospinal system of laboratory animals, the nasopharyngeal washings from patients suffering with the disease. No definite lesions in these experimental studies have

been demonstrated either in phrenic or vagus nerves. Nevertheless, the gross pathological changes in the brain and spinal cord, so closely resemble the findings in lethargic encephalitis, that Rosenow considers epidemic hiccough as a variety of this condition.

Hiccough occurs at times during the course of pneumonia, as a rule, however, in the gravest forms associated with severe toxemia, and is frequently a terminal sign.

In typhoid fever hiccough may appear either as a sign of peritonitis due to perforation, or may be indicative of a serious toxemia. In a young man (N. G.) of eighteen years with a severe attack of typhoid fever, with marked toxemia but without serious complications, this symptom appeared during the fifth week of the disease and persisted by day and night notwithstanding all attempts at relief. The hiccoughs became so violent that death appeared imminent; but the condition was apparently relieved by direct galvanization to the phrenics. In relapsing fever and cholera, singultus may become extremely serious, and may continue over a long period often until the temperature has again subsided.

Hiccough may occur as an intoxication due to chronic nephritis, associated with uremia; in diabetes, gout, and alcoholism. In chronic nephritis this symptom is ordinarily associated with a high blood nitrogen and urea, pointing to its toxic origin. In diabetes and gout the blood chemistry, too, gives evidence of a serious toxemia.

4. *Affection of the Thoracic Viscera.*—Among the affections of the thoracic vicera in which hiccough may occur, the following are most important; bronchial asthma, diaphragmatic pleurisy, empyema, gangrene of the lungs, pericarditis, tumors of the chest. It may occur in any of these affections due to an irritation of the pneumogastric, in addition to the toxemia occasioned by the individual disease. In pericarditis it is a significant sign of an impending fatal outcome; in chest tumors it is frequent, and is directly due to pressure along the phrenic nerve or at its origin.

5. *Affections of the Abdomen.*—Hiccough occurs in many affections of the gastrointestinal tract, in gastritis, gastric atony, dilatation, carcinoma, amebic dysentery, enterocolitis, intestinal obstruction, appendicitis, pancreatitis, hepatitis, cholecystitis, peritonitis, and following operative procedure on the gastrointestinal tract.

In atony and dilatation, it is usually due to the distention of the stomach, and is therefore frequently relieved by lavage. In carcinoma of the stomach, involving the pylorus, it is likewise due to distention, while in carcinoma of the cardia and body of the stomach, it is caused by the proximity of this affection to the diaphragm and reflex irritation of the splanchnic plexes. In amebic dysentery and enterocolitis it occurs in the grave forms before death, when the peritoneum is involved. It is not uncommon in the last stages of intestinal obstruction as well as in cases of strangulated hernia in which operation has been too long delayed.

It occurs in cases of acute perforative appendicitis, suppurative pancreatitis and perihepatitis, serious gallbladder infections and peritonitis, due to the involvement of the lower surface of the diaphragm in which affections the hiccough becomes extremely aggravated and persistent, usually with fatal termination.

Hiccough may be an alarming symptom following abdominal operations. It occurs not infrequently after manipulation of the upper abdominal organs, such as in operations on the gallbladder and stomach, coming on immediately and gradually subsiding after a few days. In the more serious forms, due to infections and consequent peritonitis, it usually appears later; that is, after a few days becoming more and more intense and persistent and denoting a fatal outcome.

Kuttner has reported twelve cases of hiccough following operations. In this entire series, the occurrence of this symptom was noted within a few hours following the operation. The type of operation or anesthetic used apparently had no influence as a causative factor. Frequently the condition became so severe as to become an alarming complication. Of the twelve cases reported, four were in operations on the genitourinary system; eleven of these patients were males.

6. *Cerebrospinal and Other Organic Nervous Affections.*—Hiccough occurs in many organic nervous affections. It has been observed in cases of brain tumor of the posterior cranial fossa, lesions of the cord, epilepsy, meningitis, and as the crisis in tabes dorsalis (probably due to direct irritation of the ninth and tenth nuclei in the medulla) and in epidemic lethargic encephalitis, hydrocephalus, etc. It has been stated that under rare conditions, an attack of hiccough may replace, as an equivalent state, the usual epileptic seizure.

SYMPTOMATOLOGY

The symptomatology of singultus varies with the causation and severity of this affection. As has been pointed out, when the affection is moderate, appearing at intervals of every ten or twenty seconds, sufficient time elapses for the respirations to proceed easily and deglutition, too, is not impeded. When the hiccough, however, proceeds in rapid succession and continues for long periods, both day and night, exhaustion is rapidly brought about and with it signs of an impending fatal outcome. With the exhaustion, discomfort and pain arise in the lower portion of the chest, and in addition, headache, thirst, acceleration and weakness of the pulse, are not uncommonly noted. The patient now finds himself much debilitated, extremely nervous, and not infrequently with a fear of impending danger to life.

TREATMENT

At times, depending upon the severity of the condition, the simplest measures will overcome an attack of hiccoughs, while in other instances, none of our known remedies will exert the slightest influence. These simple remedies consist of sipping water, taking deep inspirations at regular intervals, or in exciting sneezing as by means of snuff or tickling the nares or the throat, causing vomiting; or in forcible traction on the tongue; or by a sudden shock, produced unawares to the patient; sipping bits of crushed ice; pressure on the back of the neck; hypodermic injection of adrenalin chloride, 1 in 1,000; inhalation of amyl nitrite or ammonia; the ice bag or a mustard plaster to the epigastrium; lavage of the stomach; galvanism over the cervical area, etc.

In the more aggravated forms it is important as far as possible to determine the cause of the affection; relief frequently being afforded by overcoming this factor. If this is occasioned by dietetic indiscretions the stomach should be emptied by means of emetics, or better by lavage. Careful dietetic regulations should be insisted on and the various gastrointestinal disturbances as far as they bear a causative relation to this condition, should be relieved by means of appropriate treatment.

In many instances benefit is derived from lavage of the stomach with an alkaline solution; in other instances purgatives of various forms give relief. The following remedies have at times been found of value: tincture of capsicum, Hoffman's anodyne, tincture of valerian, bromides and chloral, tincture of musk and oil of amber, cocaine, anesthesin, chloretone, belladonna or atropine and validol.

Of special value according to our experience is the remedy recommended in recent years by Macht known as benzyl benzoate. Inasmuch as this drug exerts its chief effect peripherally on the smooth muscle structures, it is most useful in the treatment of hiccoughs of probable peripheral origin. It should be administered in doses of from forty to sixty drops, well diluted, at two or three hour intervals. In renal disease, the usual associated uremia must be especially treated by means of hot packs and baths; pilocarpine or jaborandi.

In serious and persistent singultus, especially those forms complicating acute peritonitis, pancreatitis and following abdominal operations, opiates in the form of morphine or pantopon administered hypodermically and inhalations of chloroform are to be recommended early as a means of affording at least a certain degree of temporary relief.

In certain aggravated cases under our care, direct galvanization to the neck was the only means of obtaining relief. Recently D'Alessandro described a method which he has employed with much success. The left carotid sheath is grasped by the thumb and forefinger, at the anterior border and midway between the origin and insertion of the sternocleidomastoid muscle. The sheath is compressed tightly for about one minute and the hiccough usually ceases immediately.

CONCLUSIONS

1. Hiccough is a symptom varying in intensity from a slight form to an extremely grave type, which may terminate in death.

2. It is important in the proper treatment of this affection to determine its cause as far as possible, which, however, may be extremely difficult in many instances.

3. Numerous remedies are recommended in the treatment of this affection, but are so uncertain that it is frequently necessary to take advantage of the various forms, one after the other, in the hope of obtaining a cure.

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Six Deaths Following Fumigation with Hydrogen Cyanide

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Hydrogen cyanide or prussic acid generated by the action of an acid upon sodium cyanide has been used in the United States since 1886 as an insecticide with but few accidents (1). It is a deadly poison especially in the hands of an individual not fully aware of the danger of its use, or lacking intelligence and skill to guard against accidents.

The more extended use of this poison in the last year for the destruction of pests is responsible for the increasing number of deaths by this agency. The seriousness of the situation is forcibly brought to our attention in the report of six deaths during one fumigation. Unless a community has had a similar tragedy such as the one that occurred in Chicago, and passed regulations to safeguard its people against such accidents, deaths will continue to be reported by this dangerous method of fumigation.

On the night of March 3, 1923, the proprietors of a restaurant in South Chicago turned over their restaurant to a man engaged in the extermination of pests to have the roaches destroyed by him. Above this restaurant were two flats. The people in these flats were warned in a perfunctory manner by the fumigator that he was going to fumigate the restaurant below and to leave their windows open. The spaces around the water and steam pipes entering the ceiling were sealed with paper. A shaft two feet by six inches leading to the flats above was not properly sealed and the gas being generated entered the first and second flats above. The materials used in the fumigation process and their proportions were these recommended in a Farmers' Bulletin of the Department of Agriculture (2).

Sodium cyanide	1 oz.
Sulphuric acid	1½ oz.
Water	3 oz.

For each 100 cubic feet of space to be fumigated earthen jars or crocks having a capacity of about two gallons were used as generators. The water was added to the jars and the required amount of acid afterward to avoid spattering, which would occur in the reverse order. After the required number of jars were prepared, paper bags containing the cyanide were dropped into the dilute acid. The fumigator sealed the front door of the restaurant and put a sign on the door warning the public not to enter. At 9 a. m. the next morning one of the owners opened the front door. The gas was so strong that

he was forced to leave and was under a physician's care for two days. At 10 a. m. a roomer in the flat above who had slept in a front room with his window wide open found one of the occupants dead in the bath room. A physician was called who notified the police, who in turn found the bodies of five more people. The police noted a peculiar odor upon entering the flat. The bodies of all the victims had the natural color and resembled those in deep sleep. The dependent parts of all were of a light red. Three hours after the bodies were discovered the peculiar peach kernel odor of hydrocyanic acid was detected coming from the open mouths of the victims. Lividity and rigor mortis were marked in all six cases.

A postmortem examination was made upon only one of the bodies, H. S., aged fifteen years. Upon opening the body the odor of hydrocyanic acid was marked in the thoracic cavity. The right ventricle was full of dark fluid blood. The lungs, liver, kidneys and spleen were highly congested. The stomach and bowels did not show anything abnormal. The lungs, kidneys, liver, stomach, bowels, and a specimen of blood were removed for chemical examination. This examination, made eighteen hours after the postmortem, gave a positive Shönbein test for cyanide but failed to give the thiocyanate and Prussian blue tests.

The people in the adjoining flat and the flat above had their windows open and escaped being asphyxiated. In the flat above where the accident occurred the people noted the odor of the gas and opened their windows and escaped being poisoned. Four gold fish in a bowl of water in one of the rooms were killed by the absorption of the acid fumes. (Milk and other liquid food also absorb hydrocyanic acid and should be removed before fumigation.)

The use of hydrocyanic acid as an agency for disinfestation of dwellings should be forbidden by the health authorities. If its use is permitted the dangerous nature of the gas must be communicated to the owners and tenants of the building. The building must be vacated and fumigation performed by an intelligent person who understands the necessary safeguards against accident.

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Radiological Findings in a Case of Echinococcus Cyst of the Lung and the Liver*

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Case.—P. M., Serbian, female, aged thirty. Admitted to the Volunteer Hospital January 9, 1922. Her mother and father were reported as well. There was no history of family diseases. There had been no diseases of childhood. The surgical and menstrual histories were negative.

Eight months ago the patient began to complain of belching, nausea, and vomiting after meals. Later pain developed in the right side of the abdomen, which was dull in character and more or less continuous. There was no relation of the pain to eating. The appetite was good, bowels constipated, urination normal. There was no loss of weight.

The patient was well nourished, and did not appear acutely ill. The abdomen, on palpation, presented a mass in the right upper hypochondriac region below the costal margin. The mass was smooth and tender on palpation and moved with respiration. The pulse was 70, temperature 98° F. on admission. The urine was straw yellow, specific gravity 1.025, with a heavy trace of albumin. Microscopic examination showed numerous pus cells, epithelial cells and mucus. Pain in the abdomen, gastric distress, nausea, belching and vomiting were the chief complaints. A clinical diagnosis of hydrops of the gallbladder was made.

The patient was referred for radiological examination of the gastrointestinal tract and gallbladder region on January 11, 1922. Examination of the gastrointestinal tract revealed no evidence of any pathological condition. Examination of the gallbladder revealed a mass in the right hypochondriac region, extending downward, below the free border of the right lobe of the liver for about four inches, covering the right kidney. It was smooth and sharply circumscribed and had the same density as the liver substance. The same shadow repeated itself on the gastric plates. A diagnosis of cyst of the liver was made.

The patient was operated upon on Jan. 17, 1922. A transverse incision in the right hypochondriac region was made. There was no free fluid found in the peritoneal cavity. A large cyst the size of a grapefruit originating in the liver and protruding downwards was discovered. The cyst was pearly grey in color, soft in consistency and fluctuating. The cyst was opened and clear greyish fluid was found. The contents of the cyst, besides the fluid, consisted of numerous pieces of greyish tissue, which were thought to be daughter cysts. After evacuation the cyst was removed. Another cyst, smaller in size, was treated in the same manner. A third cyst was found in the left lobe of the liver, but excision of the latter was thought inadvisable. It was then packed with gauze and a drain put in place.

The parent cyst contained a number of daughter and granddaughter cysts. Extending from the inner wall of the cyst there were little fat granules, which eventually developed into scolices, which represented the head of the tænia echinococcus. The outgrowth examined under the microscope was found to contain four sucking discs and a circle of hooklets. One of

*Read before the Harlem Medical Society, May 3, 1922.

the cysts was multilocular containing loose bodies surrounding a capsule of connective tissue.

When infection takes place from a hog or dog, the embryo freed from the egg shell burrows through the wall of the intestine. On reaching the peritoneal cavity it enters the portal circulation and is carried

FIG. 1.—The semilunar shadow in the right hypochondriac region is the protruding echinococcus cyst of the liver.

to the liver. On entering the systemic circulation, it passes to the pulmonary capillaries. On reaching the liver or the lung the hooklets disappear and the small embryo is gradually converted into a small cyst, which is two distinct layers—external laminated, which is the capsule proper—and the internal paren-

FIG. 2.—Shadow of the echinococcus cyst of the liver.

chymatous layer. These are gradually converted into cysts, having the same structure as the mother cyst. A section of the endocyst was made and found to be typical of the daughter echinocccus cyst. The patient died on January 18, 1922.

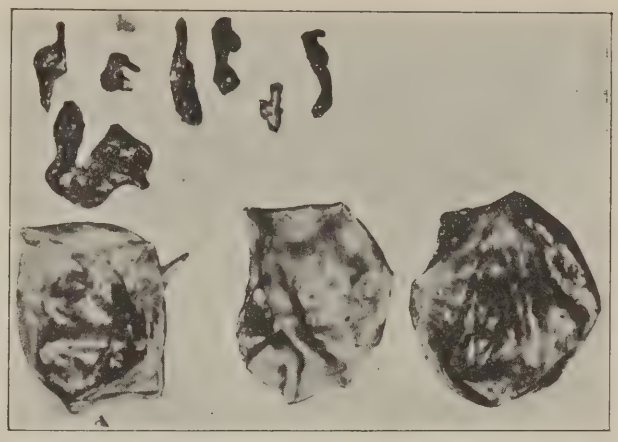

FIG. 3.—Mother and daughter cysts excised from the liver.

FIG. 4.—Lung showing three large echinococcus cysts.

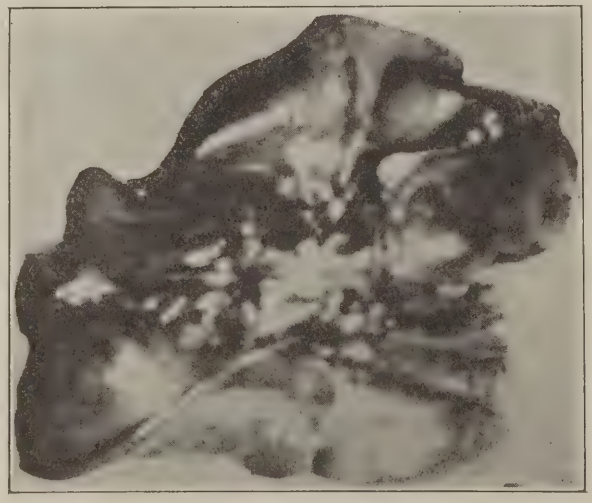

FIG. 5.—Posterior view of the lung.

AUTOPSY REPORT.

The peritoneum was found to be smooth and uninjected. There was about a pint of blood stained fluid. The intestines were moderately filled with gas. The free edge of the liver was at the tenth rib. There was no evidence of thrombosis in any of the large bloodvessels. The liver was perfectly free with a gauze drain leading from the abdominal wound to the under surface of the liver. The gallbladder was normal and moderately filled with secretion. The liver showed cystic areas and one cyst on the left lobe of the liver. Surrounding the areas of the cyst removed at the operation, there were a number of hemorrhagic spots and a few areas of brown atrophy. The three cysts occupied almost a third of the area of liver tissue. A cut section of the liver showed a nutmeg liver with brown atrophy. The spleen was soft and normal in size. The right kidney was freely movable and displaced downwards. The pelvis of the kidney contained pus. The kidney was smaller than usual, the capsule peeling easily. The left kidney was apparently normal.

The lung showed two cysts in the right lower lobe and one cyst in the left upper lobe. These were similar to those found in the liver and occupied two thirds of the pulmonic field.

In this case the clinical picture was confusing. The x ray examination of the chest was not done prior to the examination, because it was not requested. The diagnosis in this case would have been comparatively easy with a radiographic plate of the lung. In spite of the negative clinical findings of the lungs, the x ray examination and the findings of the multiple cysts of the lungs, together with the suspicious shadow at the right lobe of the liver, would have made the diagnosis of echinococcus cyst comparatively simple.

The only time when clinical diagnosis of echinococcus cyst of the lung is possible, is when these perforate into a bronchus, the patient coughing and expectorating the scolices and daughter cysts. There was no cough or expectoration in this case. Therefore it is obvious that in every abdominal condition, where an x ray examination is required, the internist as well as the surgeon should insist on a routine examination of the chest.

Conditions other than those mentioned, such as Hodgkin's disease, lymphatic leucemia, abdominal cancer, with metastasis, make their early appearance in the lung, before the typical clinical symptoms manifest themselves.

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Diagnosis of Occlusion of Posterior Inferior Cerebellar Artery*

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Occlusion of the posterior inferior cerebellar artery is not a frequent occurrence. Its diagnosis depends upon a critical analysis of the clinical symptoms. Since occlusion of the vertebral artery, of which the cerebellar is a branch, may give similar manifestations, it is to be borne in mind that there are nevertheless additional symptoms depending on a wider distribution of the latter bloodvessels. In view of this fact and before presenting a description of a case which has the fundamental characteristics of this affection, it would not be superfluous to recall the anatomical facts concerning the origin and distribution of this artery.

Each of the two vertebral arteries gives off a posterior inferior cerebellar artery at about two cm. below their union into the basilar trunk. Slightly above it the anterior spinal artery originates. The latter descends along the anterior median fissure of the medulla oblongata and sends branches into the interolivary bundles, posterior longitudinal bundles, nucleus of the twelfth nerve, and other nuclei below the fourth ventricle, also into the pyramids. The posterior inferior cerebellar artery passes between the roots of the twelfth and the eleventh and tenth, then bends at a right angle backward and runs between the medulla and the cerebellar hemisphere; then divides into a mesial and a lateral branch. The mesial supplies the mesial part of the hemisphere and the inferior vermis. The lateral branch supplies the inferior surface of the cerebellar hemisphere as well as the superior surface after its anastomosis with the superior cerebellar artery, but the trunk of the inferior cerebellar artery gives off branches to the medulla. It is therefore evident that when the anterior spinal arteries are occluded, symptoms referable to the central and anterior parts of the bulb will be present, but when the posterior inferior cerebellar artery is occluded, symptoms referable to the lateral portion of the medulla oblongata will be conspicuous.

While this distinct distribution of the two branches is common, nevertheless it should be borne in mind that there may be variations in distribution of the vertebral arteries, since the latter in some cases have been found to supply the lateral and the posterior part of the medulla like the posterior inferior cerebellar artery itself. Such a case is reported by Breuer and Marburg (1). However, in the few exceptional cases recorded, in addition to the symptoms of occluded posterior inferior cerebellar artery, there were other symptoms.

For a proper and correct diagnosis in cases of this kind, the anatomical arrangements of the nuclei of the cranial nerves, the pathways of the latter, the relative position of the first, and the distribution and direction of various tracts, the function of the latter should be taken into consideration. A careful discrimination of the clinical symptoms in the minutest details will enable one to arrive at a localizing diagnosis.

If we turn our attention to the clinical picture of occlusion of the posterior inferior cerebellar artery,

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judging from its distribution in the medulla we find that while there may be many variations, nevertheless the outstanding symptoms, common to all cases, are as follows: Sudden onset; motor disturbances on the same side in the form of ataxia and asynergy; sensory disturbances on the opposite side and of the syringomyelic type; symptoms referable to the glossopharyngeal and vagus nerves, such as difficulty of deglutition, impaired sensibility of the pharynx, paralysis of the soft palate and larynx; symptoms of involvement of the facial nerve on the side of the lesion; symptoms of involvement of the sympathetic nerve (narrowness of the palpebral fissure and of pupil, also retraction of the pupil).

An analysis of the cases put on record shows considerable variability in the number of the symptoms mentioned and in their intensity, also in the presence of additional disturbances. For example, in Leyden's case, in which a focus of softening was found in the right half of the medulla there were no objective sensory disturbances (2). In Hun's case, one of the softened areas was in the left side of the medulla. Analgesia and thermoanesthesia were present in the left side of the face and right side of the body. Ataxia was present on the side of the lesion. There was a tendency to fall toward the left and the head was inclined to the same side (3). In Muller's cases, the symptoms were: Dysphagia, paralysis on the side of the lesion of the soft palate, larynx and sympathetic supply; weakness of the corneal reflex; sensory dissociation on the left side of the body and over the first branch of the fifth nerve in the face; vesical symptoms; intense headache; priapism; glycosuria and albuminuria (for a short time). There were no motor symptoms in the extremities.

Eisenlohr and Lichtheim (4) consider as characteristic of occlusion of posterior inferior cerebellar artery sudden loss of speech, of movements of lips, tongue, paralysis of the larynx and of the limbs on one side. However, these symptoms were not present in every case, such as in Spiller's (5). The reflexes are absent or lost in some cases and exaggerated in others. In Rossolimo's cases, they were diminished (6); in Senator's case, they were lost (7); in Hun's case, exaggerated on one side; in Spiller's case, abolished, and increased in Anderson's case (8). Sympathetic phenomena are not present in every case, although as a rule they are frequent. Paralysis of the soft palate may be bilateral. Disturbance of speech, although frequent, is not constant. Subjective sensory disturbances are common, but again not constant. Objective sensory disturbances of the syringomyelic type are frequent. In Senator's case, however, also the tactile sense was impaired (9). In Spiller's case, the sensations were preserved.

The involvement of sensations over the area of distribution of the fifth nerve may be confined to one or more of its branches on the side of the lesion or on the opposite side, depending upon whether the involvement was in the spinal root or in the central tract of the fifth nerve after the fibres have decussated (10).

The enormous variations in the symptomatology are evidently due, judging from the pathological reports, to the difference in the precise localization of the lesion and its extent. Although in the majority of cases the number of symptoms is large, there are cases which are unaccompanied by widespread clinical features, but in which, nevertheless, the symptoms present are so persistent and conspicuous that an error of diagnosis may be avoided. Such a case is submitted here.

Case I.—Patient S. S., male, aged thirty-six, automobile repairer, about three months ago, while getting off a car, saw himself running towards the left side, but he did not fall. This lasted a few minutes. Several days later severe headache developed suddenly in the right temporoparietal region, which lasted several hours. There was no vomiting or dizziness. The next morning he felt very weak and could not go to work. The headache reappeared on the same side and was accompanied by vertigo. Both lasted five to ten minutes. This was followed immediately by difficulty in swallowing and awkwardness in the left upper limb.

At the end of five weeks he presented the following condition: Gait and station, with open and closed eyes, normal; station on either foot, normal; movements of individual extremities, correct; grip of either hand, normal. The head seemed to be slightly tilted to the right, and the face slightly deviated to the left, the left nasolabial fold being somewhat deeper than the right. The right orbital fissure appeared to be wider than the left. The pupils were equal and reacted to light, but the right responded more sluggishly than the left. The ocular muscles were normal, also the fundi oculi.

There was no ataxia in the upper extremities, no adiadochokinesia, and no tremor. Pointing with eyes closed was correct with either hand. The knee jerks were markedly increased, there was no ankle clonus on either side, and the plantar reflex was of flexor type by any of the methods.

Sensations were altered on the left side in the face, neck, thorax, dorsum, shoulder, arm and hand. The sense of touch was normal and equal on both sides, but pain and temperature perceptions were considerably diminished. Cold was in some areas taken for warm, and hot was in some places not recognized at all. The region thus involved occupied the area of distribution of the second and third branches of the fifth nerve on the face; on the thorax and dorsum only as far down as the mammillary line. Immediately below this line the sensations were normal. On the arm the sensory dissociation was present on all its aspects. The deep sensibility on the left side was not involved, since position, pressure, stereognostic sense, etc., were all intact.

Another conspicuous symptom was the inability to swallow liquid or solid food, so that the patient had to be fed through a nasal tube. The soft palate and uvula were drawn somewhat to the left. The epiglottis and entire larynx also appeared drawn to the left. The vocal cords functionated normally; there was no hoarseness, the voice was clear. Sensations over the right side of the soft palate and uvula were greatly diminished. The sense of taste in the mouth was normal, the motor and sensory apparatus of the tongue intact. Smell in either nostril was normal. The patient was much disturbed by accumulation of mucus in the throat and was obliged to expectorate frequently. Hearing was normal on both sides. A vestibular test showed loss of function of

the vestibuloocular as well as of the vestibulocerebellocerebral pathway from the vertical semicircular canals of both sides. The horizontal canal pathway appeared to be unaffected. There were no other abnormal symptoms; Wassermann reaction of blood and spinal fluid normal; mentality good; urinanalysis, negative. There were no evidences of a focal infection. The heart was somewhat enlarged and a mild presystolic murmur could be heard at the base.

Repeated examinations of the patient gave invariably the same results. Only a few days ago some modifications were observed for the first time. The syringomyelic sensory dissociation described above became less marked on the left side of the face. The area of distribution of the second and third branches of the left trigeminus became less affected: instead of complete loss of pain and temperature perceptions, there was merely a slight diminution of these two sensibilities and the real loss of sensations commenced at the lower border of the mandibula. Moreover, the deviation of the face to the left was less marked than before. The secretion and accumulation of secretions in the pharynx had also diminished.

Lately the patient observed that small quantities of fluid passed down the esophagus without much difficulty. The deglutition therefore commenced to improve. With the continuous amelioration of the original condition a new symptom developed, viz., paresthesia in the left arm. Grasping it or applying a cold object to it provokes intolerable pain, There is, however, no suffering whatever when the arm is not touched.

Analysis of the symptoms in this case shows an analogy with many other cases of the same character. We find here a sudden onset with vertigo and ataxia, lasting but a few minutes and indicating a partial occlusion of the artery. As the occlusion kept on increasing and the thrombus became larger so as to narrow the lumen of the bloodvessel to a great extent, vertigo and pain in the right temporal region made their appearance again. When the occlusion became complete, the conspicuous symptoms set in. First of all, the difficulty and finally the inability to swallow, the difficulty of clearing the throat of phlegm, together with the unilateral paralysis and anesthesia of the pharyngeal muscles of the soft palate and of the uvula, indicate an involvement of nuclei of the glossopharyngeal and pneumogastric nerves. The nuclei of these two nerves are three in number: one is the nucleus alæ cinereæ, which is the terminal nucleus of the sensory portion of the tenth nerve. Most of the sensory fibres of the nerve end in this nucleus, but some descend, forming a part of a small bundle dorsal and lateral to the nucleus of the ala cinerea, namely, the solitary bundle. The nucleus of this bundle, together with the ala cinerea, is common to both the ninth and tenth nerves. The solitary bundle contains more fibres of the ninth than of the tenth. Both are mixed nerves. The sensory fibres end in the above mentioned nuclei, but their motor portions originate in the nucleus ambiguus, which is situated midway between the olive and the gelatinous substance. Its axons take a dorsolateral route and join the sensory fibres. The forward continuation of the nucleus ambiguus constitutes the nucleus of origin of the seventh cranial nerve (3).

We are thus in a position now to localize the lesion in the medulla at least for the nuclei of the tenth, ninth and seventh nerves, since they were all more or less involved in our case, which is seen from the difficulty of deglutition, paralysis and anesthesia of the soft palate, uvula and pharynx, also from the slight facial paralysis on the right side.

In the vicinity of these nuclei lies the gelatinous substance embraced by the spinal tract of the trigeminal nerve. The fibres of the fifth nerve possess distinct functions and those conveying impulses for thermic and algesic perceptions are gathered in the descending root of the fifth nerve. The involvement of these descending fibres explains the sensory dissociation observed in the lower part of the face, namely, in the domain of the second and third branches of the fifth nerve. Since the sense of touch on the face was preserved but the sense of pain and temperature disturbed, one is justified in assuming that they are separate tracts and the former succeeded in this case to escape. Moreover the existence of a sensory disorder in the area of the second branch indicates this fact that the lower part of the medulla is involved, which corresponds to the other localizations mentioned above.

The examination of the vestibular apparatus has shown that the vestibulocerebellar pathway from the horizontal canal is not involved but the pathway from the vertical semicircular canals is affected. Since the connections from the horizontal canal through the inferior cerebellar peduncles are not involved, vertigo and ataxia could not be expected. This is precisely the situation in our case. With the exception of the onset of the disease, when a sudden vertigo occurred, the patient has been totally free from it during the entire course.

The sympathetic syndrome, which is frequently present in cases of occlusion of the posterior inferior cerebellar artery or of the vertebral artery or of both, has been conspicuously absent in the present case from the time the disorder made its first appearance. Evidently the sympathetic fibres, which are located in the medulla in the dorsolateral portion of the reticular substance, escaped in spite of their close proximity to those of pain and temperature or to the descending root of the fifth nerve.

It was mentioned above that the temperature and pain sense were altered in the face on the opposite side. The lesion was presumed to enclose the spinal root of the left fifth nerve in the area of distribution of its second branch. The analgesia and thermic anesthesia over the neck, the thorax down to the mammillary line, over the dorsum down to the same level, over the shoulder, arm, forearm and hand on all their aspects, have a different localization than those of the face. Here the tactile perception was entirely preserved showing the integrity of the median lemniscus, but the fibres of Gower's tract are evidently interrupted. This pathway lies in the most lateral portion of the lower part of the medulla in the formatioreticularis. The fibres of the tract have a contralateral function because of their continuous decussation at successive levels in the median plane of the spinal cord (1). Here, as in the case of the face, it is highly probable that the tactile pathway follows a different direction than the thermal and algesic tracks. Gower's tract at the level of the

medulla under discussion lies close to the gelatinous substance of Rolando, which is the nucleus of the descending fibres of the fifth nerve. Both portions are included in the affected area. The latter consequently embraces the nucleus of the ala cinerea, the nucleus of the solitary bundle, the nucleus ambiguus, the nucleus of the descending root of the fifth nerve, finally Gower's tract. Presently the occluded branch of the posterior inferior cerebellar artery is gradually getting rid of its thrombus and its lumen is becoming free.

The progressive improvement in swallowing, in the function of the uvula and of the soft palate, and finally in the sensory disorder, speak in favor of the reopening of the bloodvessel. Gillis's statement as to the disappearance of all the symptoms in the course of two to six months with the exception of the sensory disorder (11) is partly in conformity with the condition of the present case. Here all the manifestations show a simultaneous improvement: not only the deglutition but also the sensory dissociation is gradually disappearing.

The diagnosis of occlusion of the posterior inferior cerebellar artery presents no special difficulty if its exact anatomical distribution is taken into consideration. A correct knowledge of localization of various nuclei and tracts in the medulla at its various levels is indispensable. Although, according to Salmon (12), the symptomatology is analogous to that of occlusion of the vertebral artery, although in many instances both bloodvessels were found to be involved, nevertheless a careful analysis of the clinical symptoms will enable one to make a pretty accurate discrimination of what symptoms belong to occlusion of one or the other vessel. By reason of its larger distribution, namely, over a larger area of brain tissue (see above), the symptomatology will naturally be richer than in cases where only one of its branches is involved, such as, for example, the posterior inferior cerebellar artery, the area of distribution of which is limited. Wallenberg's statement (13) should be taken into consideration as it has proven to be correct in many instances. He said that when the difficulty of deglutition is persistent, both the vertebral and the posterior inferior cerebellar artery are involved, whereas a transient paralysis is caused by an obstruction of the latter artery alone. Wernicke observed that pathological foci in the lateral field of the medulla are always due to an occlusion of the posterior inferior cerebellar artery (14). The case recorded here apparently justifies such an assumption, its limited symptomatology is corroborative of the above statement. The case is also instructive from the diagnostic viewpoint that, contrary to the majority of similar cases, the morbid manifestations are here very small in number and so distinct and clear cut that not only no error can be committed as to the diagnosis, but an exact localization of the lesion can be figured out in the medulla and at its exact level.

As to the nature of the lesion, it is very probably vascular. According to Salmon *(loc. cit.)*, eighty-eight per cent. occur in alcoholics and syphilitics. Although in the present case the Wassermann reaction was negative in the blood and spinal fluid, nevertheless antiluetic treatment was instituted (neoarsphenamin, etc.), with apparently satisfactory results. The patient has a cardiac lesion which is a sufficient cause to produce an embolic or thrombotic occlusion of an artery.

The localizing diagnosis in such cases must be based upon an accurate estimate of the clinical manifestations in their relation to the function of the various constituents of the medulla.

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Pachymeningitis Hemorrhagica Interna

*Report of a Case of Nontraumatic Spinal Fluid**

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The first case found in the literature which corresponds to the symptoms now recognized as pachymeningitis hemorrhagica interna was described by Ambroise Paré, and was that of Henry II., who was fatally wounded in a tourney in 1559. Blood was found between the membranes, postmortem. In 1819, Serres separated cerebral and meningeal hemorrhage, although credit for this work has been attributed also to Morgagni. Cruveilhier, in 1829, established a theory in regard to the pathology of this condition, which was supported by Virchow (1) and was described at length by the latter in 1857. These men noted the inflammatory nature of the membranes on the inner surface of the dura, believing it to be a primary condition which precedes the resultant hemorrhage. Much controversy has since ensued in regard to this theory which, however, seems to be supported by the majority of writers. The opposite view—that hemorrhage is the primary condition and the organization of the clot is respon-

*Case presented at the Yorkville Medical Society, December 19, 1922.

sible for the membrane formation—was first held by Huguenin (2). Even at the present time the question as to the pathogenesis is still an open one, each theory having its various advocates.

Pachymeningitis hemorrhagica interna, also known as hematoma of the dura mater, is a comparatively rare form of pachymeningitis, attacking males more frequently than females. It is particularly rare in infancy, but more frequent during the first year of life than between the first and twenty-first years. Blackburn (3) in a study of 374 cases, found it only in one instance in persons under twenty years of age, and in six cases under thirty years. The great majority of cases were in patients well advanced in years. Of these 374 patients, 110 were over seventy years; one hundred were between sixty and sixty-nine years; eighty-two were between fifty and fifty-nine years; fifty-one cases occurred between forty and forty-nine years; and twenty-five in persons between thirty and thirty-nine years of age. According to this writer, statistics show that this condition is more frequent among the aged insane, in paresis, and in epileptics, and although it cannot be considered as characteristic of any special form of mental disorder, it seems to be more common in general paralysis and epileptic insanity.

The condition is attributed to many and varied causes. It occurs generally in adults suffering from progressive paralysis, senile dementia, hemorrhagic diathesis, arteriosclerosis, brain tumors, alcoholism, lead poisoning, syphilis, severe anemia, tuberculosis, and as a result of traumatism and sunstroke.

Pachymeningitis hemorrhagica interna in infancy, according to Schwartz (4) is probably an infectious disease and may, in all likelihood, be traced to the meningococcus. He believes pachymeningitis and leptomeningitis to be different manifestations of the same organism, namely the meningococcus. Further, that since there are various forms of meningitis produced by various organisms, it seems likely that similar divisions might occur among cases of pachymeningitis. To substantiate his theory, he refers to two cases in children, one reported by Rosenberg (5), in which streptococci were isolated, and another reported by Dupéné and Dubourg (6), in which tuberculous meningitis and pachymeningitis were present in the same case. Whether the same form of the disease is found in adults as in infants, and whether the theory of infection is identical in both is still to be proved. Bulging of the fontanelle is considered one of the most significant features in cases of children.

The symptoms do not always form a precise clinical picture, and for this reason the diagnosis may present the greatest difficulty. In fact, Bramwell (7), Jelliffe and White (8), Elsner (9), Spear (10), Blackburn (11), and others admit that the condition is rarely recognized during life. Very recently, however, Arthur D. Dunn (12) has published a report of five cases of internal hemorrhagic meningitis, in which he pointed out the uniformity of the clinical picture they represent. He defined and described a group of symptoms pathognomonic of this disease, making it possible for every physician to recognize the condition. The fact that the course of the symptoms depends upon the situation and extent of the morbid process must always be kept in mind.

The onset is always sudden, ushered in with severe and almost unbearable headache, usually located in the occipital and basal regions and in the neck. Associated with headache are found vomiting, rise in temperature, convulsions, a relatively slow pulse rate and more or less stupor. Evidences of meningeal and spinal nerve root irritation soon develop. These include hyperesthesia, deep muscle tenderness, tenderness along the spine, muscular rigidity and Kernig's sign. Probably the most important diagnostic sign is furnished as a result of lumbar puncture, which shows a bloody spinal fluid containing well formed red blood cells giving negative smears and sterile cultures, together with a strong albumin and globulin reaction. A striking feature of the disease is the reappearance of fresh blood in the spinal fluid following every insult or exacerbation of symptoms such as headache and convulsions. This phenomenon is peculiar to internal hemorrhagic pachymeningitis.

Regarding the secondary symptoms, Dunn says: "Symptoms of irritation or destruction of the upper motor or sensory neurons such as paralyses, pareses, convulsions, Jacksonian epilepsy, exaggerated tendon reflexes, disturbed superficial reflexes (positive Babinski, Oppenheim, absent abdominal reflexes, etc.) disturbed psyche and sensorium, are merely phenomena which mirror the localization and severity of the process. The absence of residual paralyses is noteworthy. Choked disc and retinal hemorrhages are frequently noted in the literature. They were absent in our cases, which was probably due to the fact that all of our cases save one were punctured within twelve hours of the onset, and that subsequently the intracranial pressure was not allowed to increase much beyond the normal in so far as it could be reduced by repeated lumbar punctures."

In my case presented below, the absence of choked disc and retinal hemorrhages were also noted, in spite of the fact that there was an unavoidable delay of three days in performing the first lumbar puncture. Although the second puncture followed closely upon the onset of the recurring symptoms, there was no variation in the results obtained. According to our findings it would therefore appear that Dunn's theory regarding the influence on intracranial pressure as affected by the difference in time between the onset of the attack and the administration of lumbar puncture has not been borne out in the present instance.

CASE.—Patient, a man of fifty-eight years, first seen June 7, 1922. His family history, particularly as to blood diseases, hemophilia, cerebral hemorrhage or tumor of the brain revealed nothing of importance. Patient had always enjoyed excellent health, could not recall any illness since infancy or childhood. Habits had been good and regular, except that he had always been a heavy beer drinker. No history of trauma.

Onset came suddenly, with intense headache, vomiting and a convulsion. For the next forty-eight hours he lapsed into a stupor, with severe pains in his muscles, cramps, and paravertebral tenderness. Muscular pains were so severe that the patient cried out when he moved about. There was a febrile reaction of 102 degrees; pulse 80. His head was drawn backward; neck rigid; Kernig's sign was present; absence of patellar reflexes. Suggestions of Babinski and Oppenheim's signs were obtained about the

third or fourth day after onset. Fundi were reported normal by an ophthalmologist, but patient showed conjugate deviation to the left; no other eye symptoms or disturbances of ocular muscles. Pupils and pupillary reflexes normal. At no time did patient complain of diplopia. There was no ptosis. Leucocyte count 12,000. Urine: specific gravity 1,022; showed albumin, hyaline and granular casts, no sugar. Systolic blood pressure 180.

Lumbar puncture had to be delayed for two days, owing to certain objections of family and friends. On June 10th—three days after onset, and about ten hours after the second convulsion—lumbar puncture was performed by Dr. Emanuel Appelbaum and myself and twenty-five c. c. spinal fluid were obtained under increased pressure. Examination showed a bloody or orange yellow fluid with blood sediments. Cytology was not performed, owing to the presence of red blood cells. Bacteriological examinations of smear and culture, after twenty-four, forty-eight and seventy-two hours, were negative. Albumin, three plus. Globulin, three plus. Fehling's reduction, three plus. Wassermann, of both spinal fluid and blood, negative.

The relief of symptoms following lumbar puncture was phenomenal. The prompt alleviation of the headache, stupor, muscle pain and stiffness was dramatically striking and noteworthy. However, four days later patient was seized with a mild convulsion, and immediately relapsed into a condition similar to that experienced prior to the lumbar puncture, although less severe.

Lumbar puncture was again performed, and again brought almost instant relief. The spinal fluid was practically of the same quality and quantity as on the previous occasion, giving the identical reactions throughout. Reduction of the intraspinal pressure by lumbar puncture brought definite and permanent relief, and after a short convalescence of three weeks, patient recovered entirely, except for a mild insomnia and slight muscular stiffness, which persisted for one or two weeks longer.

Diagnosis of this condition was pachymeningitis interna hemorrhagica. The etiological factors in this case no doubt were hypertension and alcoholism. In this connection it may be of interest to mention that Kremiansky as early as 1868, by means of experiments performed on dogs, proved conclusively that alcoholism is one of the etiological factors in the production of this condition.

Spinal puncture in cases of pachymeningitis hemorrhagica interna serves a twofold purpose. It is not only a valuable instrument in affording permanent relief to these sufferers, but is also of great service as an important means of diagnosis. Widal, Froin and Chauffard are among the numerous investigators who have thrown much light on this and similar conditions since lumbar puncture was described in 1890.

From hemorrhagic encephalitis this condition may be differentiated by the diagnostic criteria of the latter—somnolence, ophthalmoplegia and profound asthenia; by its diverse symptom complex, by the constant eye symptoms due to the paralysis, such as ptosis, diplopia, etc.

It may be differentiated from hemorrhagic poliomyelitis—which also gives a bloody spinal fluid—by the fact that there is recurrence of hemorrhage in this condition, and by the absence of paralyses which are predominantly the result of spinal cord lesions. In addition, there is always evidence of infection in acute hemorrhagic poliomyelitis, there is marked polymorphonuclear leucocytosis in which the cell count may reach as high as 40,000 and, often, enlargement of the spleen can be made out.

Again, in early cases of encysted hemorrhages, with headache, pupillary contraction, vertigo and mental torpor, cerebral syphilis and brain tumor are suggested. A Wassermann is not of much value in differentiating pachymeningitis from cerebral syphilis, since syphilis is frequently considered to be an etiological factor in the former condition. Differentiation may be accomplished by the fact that a syphilitic meningitis is usually located at the base of the brain and gives rise to ocular and facial palsies, neuralgia, optic atrophy and deafness. These observations were made by Josephine B. Neal (13), who also distinguishes cerebral tumors from pachymeningitis by the difference in the degree of edema of the disk; it is less marked in cerebral tumors.

In addition, pachymeningitis hemorrhagic interna must be diagnosticated from the following conditions: from tuberculous meningitis, pneumococcal meningitis, cerebrospinal meningitis, suppurative meningitis, hydrocephalus, leptomeningitis, brain abscess, apoplexy, sinus thrombosis, etc., and spinal puncture should be employed toward this end. From traumatic meningitis, however, the history of previous trauma will decide the diagnosis.

In conclusion, therefore, it is doubtless evident that the prognosis of pachymeningitis hemorrhagica interna has been greatly influenced through the employment of spinal puncture both as a curative and diagnostic measure, and that the outlook at present is a far more favorable one than existed prior to its application in this particular condition. Until quite recently the opinion has been practically universal that this form of pachymeningitis, when recognized at all, was encountered only at autopsy, and then, often, only by chance. With these facts in mind it seems but logical to urge that this means of differentiation be employed in all cases presenting symptoms of the nature herein referred to in all cases in which the diagnosis is either doubtful or impossible.

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Leucemia

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Our knowledge of leucemia may be said to date from 1845, when Emmet and Craigie, of Edinburgh, each published a report of this affection. Rudolph Virchow soon after confirmed the observations of these investigators, and suggested the name of leucemia for the disease.

The morbid anatomy of leucemia shows the spleen, marrow and lymph glands to be affected, that is, the whole hematopoietic system is involved, the difference in type depending upon the dominance of the myeloid or the lymphoid process. Roughly speaking, two types are recognized, the myeloid and the lymphoid, other varieties being regarded as atypical forms.

Leucemia is said to appear rather more frequently among males than females, and there is apparently an age of election according to type. Thus acute lymphatic leucemia occurs most frequently between the ages of twenty and twenty-five years, with the greatest incidence in the first five years; chronic myeloid leucemia, on the other hand, manifests itself usually between twenty-five and forty years, and the chronic lymphatic form is seen most often between the ages of forty-five and fifty.

There is no trustworthy evidence proving this disease to be hereditary or communicable, but, as a matter of fact, the real nature of the affection is yet to be discovered. It has been known to follow chronic diseases like malaria, tuberculosis and syphilis; it has supervened on acute affections in the oral cavity, and has even been a sequel to influenza. In some instances, the disease has followed a blow. It has occurred during pregnancy. In other cases it has made its appearance when the individual was apparently in perfect health. The duration of an attack of leucemia varies to some extent with its violence, and the majority of cases noted have been of the chronic variety, the latter form being characterized by exacerbations or relapses which form, quite a feature of this hitherto baffling disease, in the majority of cases one of these exacerbations ultimately proving fatal. The myeloid form is more chronic than the lymphoid, as well as more responsive to treatment.

The onset is in most cases insidious. The growth of the spleen causes an enlargement of the abdomen, often accompanied by shortness of breath, palpitation, anemia and weakness, which cause the patient to seek medical advice. Epistaxis frequently occurs, and there may be gastrointestinal symptoms. The blood picture in all forms presents an excessive number of leucocytes, with a deficient hemoglobin and low erythrocyte count. The myelocytes which characterize the myeloid form of leucemia are said to be the precursors of the polynuclear neutrophile cells, and to result from an overstimulated hematopoiesis which is actively producing these immature cells in the bone marrow.

A rise in basal metabolism corresponding to the severity of the case has been observed, also an increase in protein metabolism, with a greatly increased output of uric acid, a retention of phosphates, and a loss of calcium. Treatment by the x ray still further stimulates this basal metabolism rate.

The agents most commonly used in the treatment of leucemia at the present time, in addition to a generous diet and such aids as bone marrow, iron and arsenic, are the x ray, radium and benzol. Thorium x has also been used.

Each physician has his own favorite remedy and method of treatment, which means, of course, that as yet there is no established agent or method of cure. The prognosis still remains doubtful. Osler says "recovery is practically unknown." Certainly a decade or so ago every case was considered altogether hopeless.

It is quite natural that each worker should extol the particular agent he has himself employed. The opinion has been expressed that benzol, if carefully used, will afford more rapid and certain results than other remedies, yet in large doses benzol has provoked violent renal inflammations, hemorrhage and leucopenia, therefore benzol treatment, like that by the x ray, is a two edged sword, and must be used with caution and intelligence. Unskilful or careless use of these powerful agents results in the destruction of hematogenetic organs themselves, with disastrous results. When the x ray is used, applications to the long bones rather than to the spleen have been advocated. The x ray is said to modify the leucemic process by exciting an inhibitive degeneration while the process itself remains unchanged. The immediate action of the x ray is apparently degenerative leading to a decrease of leucocytes as well as of the red cells. This phase is followed by a reaction, and a more or less resistant type of cell appears, the essential process, however, remaining unchanged, though in character it has undergone an alteration.

It is believed that the action of the x ray produces a leucolytic substance capable of destroying other leucocytes, for the serum of patients undergoing treatment for leucemia by means of the x ray will, if injected into other patients, cause a fall in the leucocyte count, while serum obtained before radiation and similarly injected will have no such effect. When the x ray is applied directly to the spleen we have, when the blood count is made, a toxemic process. These symptoms are less in evidence if only two or three small areas are treated at a time. The statement has been made that if the patient is kept under observation, and treatment renewed when recurrence is noted, he may maintain a reasonable degree of efficiency and be enabled to continue his work indefinitely. It has also been found that the leucocytes do not respond so readily to treatment after the first or second series of applications. During the treatment of leucemia by means of radium the white cells have shown a diminution in number in twenty-four to seventy-four hours. The

decrease in the white cells is often rapid and may continue for weeks after treatment, and at the same time an improvement is noticed in the differential count; but if too much radium is used a retrograde change ensues and the patient grows worse instead of better. The use of radium has been recommended at intervals of one to three months, applications being made to the spleen, but allowing the effects of one application to subside before instituting another treatment. In the use of the agents just described it is evident that the care and skill of the operator counts for much in the progress of the patient.

The case reported herewith is one of myeloid leucemia which occurred in my practice.

Case I.—The patient was an unmarried woman forty-five years old, by occupation a dressmaker. Her father died of pneumonia at sixty-four; her mother died at thirty from an unknown cause; one brother died of dropsy at thirty-nine; four sisters are alive and well; the patient is the youngest girl. There was no family history of nervous or cardiac diseases, rheumatism, cancer or insanity. The patient had had measles and mumps in childhood, and had an attack of influenza in 1921; otherwise she had enjoyed good health. She was thin, her complexion sallow and pale, and she looked frail and tired.

The oral cavity was negative. In the neck the posterior cervical glands were palpable on both sides and venous pulsation could be seen in the neck. The special senses were negative; pulmonary system was negative; the heart was slightly enlarged with a distinct, harsh, presystolic murmur at the apex. The menstrual history was negative except for an uneventful menopause at thirty-five. The skin of the abdomen was dry and the walls tense, and on palpation a hard unyielding mass was found filling the whole left side of the pelvis extending three to four centimetres to the right of the umbilicus and reaching down to the pubes. The inguinal nodes were palpable but not large. The extremities were markedly edematous, and the legs and feet were swollen so that patient had had to procure a larger pair of shoes. Reflexes were normal.

The patient had had influenza a year ago and had not felt well since, some months later noticing that she grew tired quickly when walking. During the past six months she had lost fifteen pounds, and when examined her weight was ninety pounds. During the past few months she had had frequent attacks of epistaxis. Appetite was good, there was no nausea or vomiting, and no abdominal distress. Blood pressure when first taken registered 120 systolic, 55 diastolic, and a few days later the systolic pressure was 105. Uranalysis findings were negative, except for a slight trace of albumin.

The patient entered the New York Infirmary for Women and Children on January 23rd, where she remained five weeks. Blood counts were made by Dr. Elsie Barthels. The first showed: hemoglobin, forty per cent.; red blood cells, 1,832,000; white blood cells, 78,000. Differential count showed myelocytes fifty-five per cent.; polymorphonuclears, thirty-five per cent.; lymphocytes, five per cent.; transitionals, three per cent.; eosinophiles, eight per cent. Fluoroscopic examination showed the stomach pushed by mass into right lower quadrant of abdomen; Cap was perfect and pointing to left. On February 28th a transfusion of 750 c.c. of blood was given by Dr. Unger.

On the 26th x ray treatments were instituted. These treatments were given by Dr. Joseph M. Steiner to whom the patient owed a great deal. Twenty-two treatments were given in all and according to the following formula: 280,000 volts; four milliamperes; distance fifty centimetres; time of treatment, five minutes. The doses were given alternately over the anterior, posterior, and lateral aspects of the spleen, using ten by ten centimetre ports of entry. Dr. Steiner said it was evident that this small dose of radium and the virtue in the radiation apparently lay in the repeated doses at fairly short intervals. Radiation was discontinued as soon as the white count dropped perceptibly below normal.

The spleen decreased in size very slowly but the patient was growing stronger and feeling better. She left the hospital on March 1st, but the radiation was continued until May 2nd. On leaving the hospital her weight was seventy-eight pounds, the edema of her extremities had long since disappeared; no heart murmur could be heard. The spleen was still large but was receding slowly; there was marked improvement in the general condition. Blood count made before leaving hospital was as follows: hemoglobin, fifty per cent.; red blood cells, 2,400,000; white blood cells, 18,000. Differential count: polymorphonuclears, fifty-eight per cent.; myelocytes, twenty-eight per cent.; lymphocytes, ten per cent.; transitionals, four per cent.; nucleated, red cells four. After leaving the hospital the patient was seen at monthly intervals; the spleen seemed perceptibly smaller at each visit until in July it was no longer palpable.

Some poikilocytosis was discernible through the greater part of the summer but the myelocyte count was approaching normality. It was evident that the treatments given during the winter and spring months were still causing a reaction, for the leucocytes count kept dropping until it reached 24,000 which raised the interesting question of just at what stage of the descent of the white blood cells should treatment be discontinued in order to prevent too great loss of the protecting army of the white cells. No myelocytes and no nucleated red cells have been found since September, 1922. The last count, which was made on February 19, 1923, is as follows: hemoglobin, eighty-two per cent.; red blood cells, 6,182,000; white blood cells, 8,200. Differential: polymorphonuclears, eighty-three per cent.; transitionals, five per cent.; lymphocytes, five per cent.; lm., seven per cent.; myelocytes, none seen.

The patient was suffering from a slight cold but otherwise appeared well. She had reached her normal weight of 128 pounds, and has resumed her occupation. She was no longer fatigued by slight exertion, had a good appetite and slept well. There had been no sign of an exacerbation of the disease, which we were taught we must expect, in twelve months of steady improvement. The history of this case encourages one to believe that with the newer methods of treatment for this hitherto fatal disease the prognosis may be entirely changed.

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Historical Medicine

A Psychohistorical Study of the Sex Balance in Greek Art*

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It is my purpose to present the data of this paper in the natural but reverse order from that which usually obtains. Illustrations will be given first and a general explanation of the phenomena will follow. The natural order to which I refer is the manner one is impressed first with the peculiarity of the general data observed and the common principle that seems to control the phenomena; later some general laws are found which seem to govern the facts, and these are given to prove the assumed correctness of the earlier observations. Many other psychohistorical and art studies might also lend themselves to this manner of treatment and thereby gain much in interest and general vividness of presentation.

Ancient Greek ideals of manhood and womanhood as expressed in the surviving remnants of their sculpture would seem to be based on the theory that the finest and noblest examples both of men and of women are made up of a blend and poise between the essential physical and spiritual characteristics of the male and the female. Since Greek art was founded upon the same ideals of truth and beauty that informed and inspired all Greek life, it follows that their sculpture, so far as it has come down to us, offers an important body of trustworthy, contemporary evidence as to the bodily and mental make-up of their ideal men and women. From a visual review of this sculptural material, it is evident that the Greek ideal was, for their men, a subtle and temperate infusion of qualities characteristically feminine, such as gentleness, sensitiveness, beauty, into a nature preponderantly strong, robust, independent, virile, and for the women, a tempering of their soft, sensitive, clinging nature and their delicate, seductive charm by the inclusion of a touch of masculine or boyish qualities, so as to make them less unqualifiedly feminine, while still finely womanly.

FIG. 1.—Apollo from Tenea, Munich. Archaic period (early sixth century). An example of the modification in the early period of Greek art of the masculine ideal by the addition of a certain amount of grace.

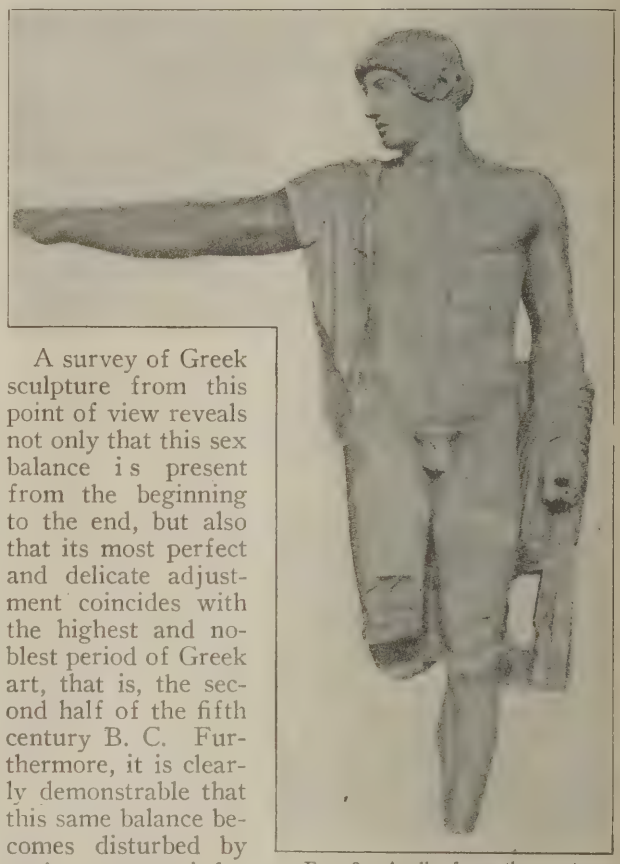

FIG. 2.—Apollo from the western pediment of the temple of Zeus at Olympia. Second quarter of the fifth century. An example of the somewhat dry and imperfect technic of the transitional period, yet showing the increasing tendency to express grace and beauty in the athletic male body.

A survey of Greek sculpture from this point of view reveals not only that this sex balance is present from the beginning to the end, but also that its most perfect and delicate adjustment coincides with the highest and noblest period of Greek art, that is, the second half of the fifth century B. C. Furthermore, it is clearly demonstrable that this same balance becomes disturbed by an intemperate infusion of qualities of the opposite sex as the evolution proceeds from the fourth century into the Hellenistic period, or else it becomes entirely eliminated and the types revert to primitive masculinity or unmitigated femininity.

The history of the development of Greek sculpture from its dim beginnings in the seventh century, through the great period of the fifth and fourth centuries, through its long autumn in the Hellenistic period to its final disintegration after the Roman conquest in the second century B. C., all this is now sufficiently well known through extant monumental evidence, so it is possible to follow the evolution of Hellenic sex ideals throughout five centuries by still visible and available material. In dealing with the actual sculptural remains, however, great care must be exercised to distinguish between original Greek works and Roman or other copies, for there is a noticeable tendency on the part of the copyist to modify the original from which he was working in accordance with his own taste or that of his time which will cause him to disturb the fine balance and

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temperance of the original by accenting unduly certain qualities and slighting or omitting others. Any effective demonstration of this problem must be by means of abundant illustration, yet without that invaluable aid a summary of the evolution may be attempted in brief compass. The arguments centre mostly around the masculine ideals, for not only was the male the dominant sex among the Greeks, but the sculptors were, without exception, men. That the whole question has a strongly homosexual tinge goes without saying.

Throughout all the archaic period Greek sculptors were too heavily handicapped by imperfect technical skill to express adequately the finer points of characterization, yet even in the midst of their efforts to master the facts of the proportions of the human body, the folds of drapery or the texture of hair and flesh, we find them endeavoring as best they might to portray certain subtle refinements in their types, never before attempted in the history of art. After the archaic, or more exactly, the transitional period, the artist's skill becomes entirely adequate even for the most difficult or delicate problems and we can thenceforward assume its sufficiency.

Fig. 3.—Head of the charioteer of Delphi (from a cast). First half of the fifth century B. C.

Even in the primitive art of the seventh and sixth centuries, one finds the modifications of the absolute "hundred per cent. male" ideal of courage, strength, simplicity, directness, by an infusion of grace, refinement, beauty. This is very clear in a series of ideal nude male figures from this period known under the generic name of *Apollos*. The series reveals from the start, and shows with increasing skill and clarity, not only the determination to make the male body correctly proportioned, strong, well built, well developed, but also to make it fine, to add beauty to the modeling and sensitiveness to the features. An attempt to portray the beauty of curly hair is invariably found. The *Apollo from Thera,* the *Apollo from Tenea* (Fig. 1) and the *Strangford Apollo* are typical examples. For all their crudity, they show indubitable signs of refinement and grace. This will be clear at a glance if one compares them with figures from Chaldean or Assyrian art, such as the brutal virility of the statues from Tello in the Louvre or the reliefs from Nineveh in the British Museum.

A study of the long line of *Maidens* or *Aunties* from the Athenian acropolis shows the tendency of the early Attic sculptors, with their strong Ionic affiliations through the school of Chios, to make their female ideal over delicate and dainty, even fussily elaborate, and too desirous to please. The figure from this series, a late one, known as *la Boudeuse,* shows a wholesome reaction against this excessive femininity, probably due to Peloponnesian influence, and interestingly foreshadows the noble womanliness of the female types which were produced at Athens by Pheidias in the next century.

In the transitional period, between the close of the Persian Wars and the middle of the fifth century, not only does technic become increasingly able to portray delicate refinements, but an ideal blending of masculine and feminine qualities in one person seems to be more clearly in the mind of the sculptor. In the robust and somewhat drily modeled *Apollo* (Fig. 2) quelling the riot of the Centaurs, from the west pediment of the Temple of Zeus at Olympia, there is a noticeable tendency towards refinement and grace. The same is true of the *Choiseul-Gouffer Apollo* in the British Museum, while the famous bronze *Charioteer of Delphi* (Fig. 3), for all its nobility, shows a refinement of build and a delicacy, especially of the hands and feet, almost inconsistent with the idea of a chariot racer. The very refined treatment of the hair, the voluptuous mouth and the full chin reveal the Ionic character of the work and tend to confirm Calamis as the author.

The second half of the fifth century witnessed the loftiest and noblest point reached by Greek sculpture. This period is dominated by three great artistic personalities, Myron, Polyclitus and Pheidias. It is noteworthy that tradition says all these were trained in the severe Doric school of Ageladas. The first two were primarily concerned in the representation of athletic types, Myron, of those in motion, Polyclitus, of those in repose. In Myron's well known *Discobolus,* though the figure is lean, clear cut and unemotional, there is very great grace and beauty in the difficult but successful pose. In the massive square cut and powerful *Doryphorus* (Fig. 4) of Polyclitus and in the slightly more slender and youthful *Diadumenus* by the same master, it is somewhat surprising to find so much emphasis placed upon the beautiful reversed curved line that forms the basis of both pose and composition in both figures. It is almost Hogarth's "line of beauty" and imparts a feminine touch to an athletic type otherwise thoroughly vigorous and masculine.

Their Athenian contemporary, Pheidias, has been exalted in modern critical opinion, to the absolute first place among all artists of classical antiquity. He was not primarily the sculptor of athletes but of divinities and to him is due the signal distinction of fixing for all subsequent time the essential types both of Zeus and of Athene. Unrivalled in his power to express the serene strength and Olympian majesty of the gods, he may be said to have summed up in visible form the highest spiritual and religious ideas of the Greeks. In his grandest statues of divinities, the colossal gold and ivory images of Zeus at Olympia and of Athena Parthenos at Athens, he seems to have given to each a strong infusion of qualities of the opposite sex. The homosexual incident recorded in Pheidias's career may not be with-

Fig. 4.—The Doryphorus of Polyclitus. Second half of the fifth century B. C. Direct robust masculinity but modified by a graceful round curve running through the body.

Fig. 5.—Head of the Athena Lemnia of Pheidias. Marble copy in the Musso Civico, Bologna. Second half of the fifth century. B. C. This head was long called "Head of an athlete."

Fig. 7.—Aphrodite of Melos, upper portion of figure. End of fifth century B. C.

Fig. 6.—The Three Fates, from the eastern pediment of the Parthenon, showing in their largeness and robustness of proportion and build a distinct tempering of the essential feminine character. Second half of the fifth century, B. C., Pheidias.

out significance in this regard, yet his *Zeus* was essentially noble and powerful, and his Athena types never approached the virago.

The extant copy of his famous *Athena Lemnia* (Fig. 5), so ingeniously recovered by Furtwängler, through a torso in Dresden and a head in Bologna, reveals the master's exquisite discretion in this matter of sex balance. He has shown us a maiden goddess, cool, poised, self sufficient and yet eminently womanly and beautiful. Especially to the head, with its simplified silhouette and modeling, he has imparted a boyish touch, so that it is quite intelligible how the exquisite Bologna copy of it was called *Head of an Athlete* before its true identity was discovered.

Similarly, that extraordinarily grand and beautiful trio of female figures from the east pediment of the Parthenon, called *The Three Fates* (Fig. 6), show a distinctly tempered femininity. Their robust and ample build, their air of repose and dignity, convey a sense of masculine quality and are responsible in large measure for the intensely Olympian character they bear.

Passing to that noble derivation from the art of Pheidias, the *Aphrodite of Melos* (Fig. 7), so lovely in her perfect womanhood that she seems to the modern mind to embody all that is finest as well as loveliest in her sex—this work even shows a sufficient tinge of largeness, poise and strength to modify her considerably from the utterly feminine. A comparison of the *Aphrodite of Melos* with the *Aphrodite of Cnidus* by Praxiteles (Fig. 8), and the *Venus de Medici* (Fig. 9), both of the fourth century, will show that in these latter this hint of the masculine is omitted, and they become distinctly less divine. Indeed the Medicean statue, for all its clever technic, is little more than a representation of an extremely pretty woman in a pose of mock modesty.

The Pheidian male creations, such as the greatly praised *Theseus* from the east pediment of the Parthenon, or the *Apollo from the Tiber,* embody unmistakable qualities of grace, refinement and beauty, but not in such measure as to overbalance their masculinity. This is interestingly compared to the close approach towards overmuch sensitiveness seen in the creations of the greatest Attic master of the fourth century, Praxiteles. In his works we feel that the scale which Pheidias kept on the side of Doric restraint, inclines now towards Ionic softness and voluptuousness. His *Hermes of Olympia* (Fig. 11) in spite of his masculine frame and splendid muscles has both in pose and modeling and

Fig. 8.—Aphrodite of Cnidus. Fourth century B. C. Dreaming and graceful with very slight modification of the purely feminine, midway between Aphrodite of Melos and Venus de Medici.

Fig. 9.—The Venus de Medici. Uffizi gallery, Florence. In the elimination of the masculine infusion seen in the older fifth century ideal of Aphrodite, this figure goes beyond the Aphrodite of Cnidus and loses nearly all hint of divinity. She is little more than an extremely pretty woman in a pose of mock modesty.

facial expression so much beauty and dreamy languor as to come close to the borderline of the too much. This is also true of his *Faun,* his *Apollo Sauroctonus* and other male figures, yet it should be said in defense of Praxiteles that the exaggerated softness and effeminacy, too frequently encountered in replicas of his works, are undoubtedly due to the overaccentuation of the copyist and did not exist in such disproportion in the originals. It is much fairer to the master to argue from the *Hermes,* which, by a miracle of good fortune, has survived into our day almost as it came from Praxiteles' hand. In the head of this work it is instructive to see how, in spite of the soft, silky texture of the close cropped curls, the essentially masculine shape of the head has been made clear, and, for all the dreaminess of the eyes and the delicately smiling lips, it is the broad brow, with the strong accentuation of the masculine frontal sinus that dominates the features.

Still it cannot be denied that Praxiteles' works all tend towards the excessive grace and effeminacy which becomes more clearly marked as Greek sculpture goes on through the fourth century into the Hellenistic period.

The contemporary works of Scopas, while showing the typical fourth century preoccupation with emotion, deal for the most part with a surging, fiery passion, expressed in energetic, masculine terms, as in the fragmentary heads from Tegea, or the many copies of the passionate *Meleager.* The head of the *Lansdowne Heracles* has an almost feminine wistfulness and reminds us that Scopas is recorded to have done statues of *Longing* and *Desire.*

The third member of the great fourth century trio, Lysippus, was much less emotional in his art and continued the sterner Doric tradition, though he heightened the masculine figure, made it more slender and elegant than the figures of Polyclitus and imparted a more lively expression to his works.

In the Hellenistic period (from the death of Alexander to the Roman invasion), there seems to be a clear parting of the ways. One branch of Greek sculpture continues the overdoing of softness and voluptuousness in the male type until the result is markedly effeminate. From this period date those *Apollos* expressed in absolutely feminine curves and elaborate coiffures (Fig. 12); also a head in the Capitolium Museum, now recognized as *Bacchus,* but long called by the name of his wife, *Ariadne,* while the sex of the puzzling *Fanciulla d'Anzio* (Fig. 13), in spite of the good preservation of the statue, has never been conclusively determined. The sculptors of this late period go even one step further and create a new type, the *Hermaphrodite* (Fig. 14), of which a number of fine examples are known.

Running parallel through this same period a second branch of Greek sculpture reverts more and more to the simple unmixed types of men and women, until finally we have such ignoble and repellent, unmodified masculine representations as the great, hulking *Hercules Farnese* (Fig. 15), of the Naples Museum or the utterly brutal, bruiser type exemplified, with great skill, in the naked bronze *Boxer* of the Terme Museum in Rome. These "hundred per cent. masculine," cavemen ideals have their feminine counterparts in the long series of so-called Venuses of the Hellenistic period. The *Venus of the Capitol,* the *Crouching Venus* of the Vatican, (Fig. 16) and other museums, the ignoble *Venus Callipyge* of the Naples Museum, adequately represent the wretched descent from the truly Olympian Aphrodite of the older times to the seductive vamp of the close of Greek sculpture as a living art.

If space permitted, an interesting and close analogy between these ideals in Greek sculpture and similar ones in Greek architecture might be drawn. The two principal Greek orders, the Doric and the Ionic (the Corinthian being merely a variant of the latter) embody respectively masculine and feminine qualities and came, the one from the hardier, severer Dorian peoples of Greece, the other from the more refined and luxury loving Ionian peoples, but it is significant that the finest and noblest example of Doric architecture, the Parthenon, has undeniable Ionic elements in it and the Temple of Nike Apteros, one of the most perfect embodiments of Ionic, is distinctly sturdier and more simple than the typical Ionic temples of Ionia itself. Again, the lesson seems to be, as in the sculpture, not too much of either masculinity or femininity, of either sheer strength or of soft beauty, but instead a realization of the ideal of temperance expressed in the old Greek motto, "μηδὲν ἄγαν," "nothing in excess."

* * *

In the consideration of the principles demonstrated in the foregoing, an explanation of the same will now be given. We will consider the essential dynamic nature of this sex imbalance.

To those who wish to connote no special love trend in this double inheritance of sex characteristics, the term bisexual constitution is used, but to those who maintain a psychophysiological view of these characters, that they continue essentially to strive for a specific love objective, the term homosexuality is used. The bisexual term is a static one, while homosexuality implies a more vital and physiological one. We prefer the latter, though both may be used if one notes that the first is static and constitutional while the latter is psychobiological or physiological. We will review briefly the general social and legal status of homosexuality in Greek times. There are so many documents on this subject that it is difficult to choose; homosexuality was either approved of or tolerated, from early and prehistoric times. The boy Eros, god of love, equivalent to the Latin Cupid, was more than a symbol, for in some places he typified the object of sexual love. In the island of Thera, one of the Cyclades, there are ancient inscriptions which are not examples of mere obscenity, but show the existence of an ancient cult of the boy Eros.

Homosexuality was not an appanage of the decadent period of Greece nor smuggled in from Asia but evidently belongs to an old native cult. Reasons for its existence and its justification were given by scientists, politicians and military men. The former asserted that man was a bisexual creature. He being half man and half woman could be an object of male love. Another explanation was that not all men but some of them were half female. All human beings were double—some were double men, some double women and others half and half; the latter were presumably the objects of male love.

(To be continued)

Editorial Articles

A NEW ANTITUBERCULOUS VACCINE

Studying the means of specific treatment of tuberculosis, Baufle and Daguet (*Revue méd. de la Franche-Comté,* July 15, 1922) have attempted to prepare a vaccine possessing a diagnostic, prognostic, prophylactic and therapeutic action at the same time. By analogy with what at present is being accomplished in a large number of infectious diseases—Delbet's vaccine, autovaccine, antigonococcal vaccine, and others, these observers have tried to obtain from products excreted by the tuberculous patient in the sputum a preparation of the type of specific vaccines. They utilized a vaccine obtained by dissolving sputum in various artificial liquids; the resulting solution being filtered by various procedures was given subcutaneously in doses varying from one third c. c. to one c. c. in a series of from five to ten injections given every second to fourth day.

A year's work has given the following results: In patients presenting a slow evolution of their tuberculosis or who resist the infection, the injections do not give rise to any local reaction—no redness, pain, heat or swelling. In other instances a very sharp reaction ensues, generally three to four hours after the injection. The redness extends in the form of a plaque varying in size from a twenty-five cent piece to the palm of the hand, or even larger, being occasionally rather painful with or without swelling and without lymphatic enlargement, all being analogous symptoms—although much more accentuated—to those produced by intradermic reaction with tuberculin. Then, in twenty-four to forty-eight hours everything subsides, and in fifteen to thirty days or more, a collection of pus about the size of a walnut develops at the site of the injection, opens spontaneously rather quickly giving issue to thick pus and resulting in an ulceration which slowly cicatrizes. In the majority of cases the sites of injection are in chronological order, the seat of an abscess having an identical evolution.

Finally, in some cases there may at first be no local reaction but later on an indurated nodule develops at the site of inoculation which goes on to abscess formation. Microscopic examination of the pus of the abscess—whether acute or chronic in evolution—revealed the presence of avirulent Koch's bacillus, because inoculation in the guineapig did not give rise to any tuberculous lesion as was shown by autopsy of the animals after a lapse of three months.

The general state of the patient reacts differently in the various cases. Patients running a high temperature do not have any further rise; on the contrary the temperature subsides and becomes completely normal. On the other hand, a subject that has usually been apyretic may present a temperature of 103° F. but this will drop to the previous apyrexia in a few days. Lastly, there are other subjects with or without pyrexia whose temperature chart is not influenced by one tenth of a degree after injections of the vaccine.

The absence of a local or general reaction most generally indicates a tuberculous process having a rapidly fatal evolution with laryngeal, meningeal, intestinal or septicemic complications. On the other hand, in some cases, the patients less frequently offer a wonderful organic resistance, the tuberculous process having ceased in its evolution, and no local or general reaction ensues. The development of a local and general reaction, and especially the development of an acute or chronic abscess at the site of the inoculation, would seem to indicate an appreciable defensive state, and in reality, in some after a few weeks there will be complete apyrexia, a very evident improvement of the general health, while at the same time the physical signs subside and the sputum and bacilli become far less abundant. Several patients followed for some time continued to show improvement while others placed in deplorable hygienic conditions relapsed and their condition became notably aggravated.

To sum up, it can be said that antituberculous vaccination by means of the sputum of patients appears to be a possibility and is inoffensive as shown by the results of guineapig inoculation. It frequently allows one to make a prognosis of the value of the resistance of the patient, likewise the gravity of the affection. Combined with sanatorium treatment and artificial pneumothorax vaccination would seem to offer much in the treatment of pulmonary tuberculosis.

OLD TIME PRACTICE OF MEDICINE AND THERAPEUTICS

Time was, and not so long ago, when the practice of medicine was not scientific, nor, indeed, was therapy. Glimpses can be had of what the rank and file of eighteenth century doctors were like, when Dr. Slop in *Tristram Shandy* is recalled. If Slop be considered a caricature, as doubtless he was to some extent, the apothecaries and surgeons in the novels

of Tobias Smollett, who himself belonged to the profession, may be turned to. Again, the father of Pendennis in Thackeray's novel is a good representation of what the country practitioner in England was at a later date.

The prescriptions of the medical men in those days, and even forty or fifty years ago, were comparatively simple, the synthetic remedies being unknown. Quinine for a cold in the head, a blue pill and a black draught for a sluggish liver, a hop pillow to induce sleep and cupping for full blooded individuals were among the popular and fairly effective remedies used then. They must have been curative or palliative, or they would not have been employed so extensively; of course, psychology enters somewhat largely into this question. When a patient is convinced that a particular medicine will do him good, or is having a beneficial effect, the whole setting of the mind for healthy, suggestive action comes into play, and an excellent illustration is given of the unconscious powers for good. The old time doctors not only were lavish prescribers of medicine, but they believed in the remedies they gave implicitly and therefore their patients did likewise.

John Wesley, the great Methodist, who, together with that wonderful orator, George Whitefield, evangelized a large proportion of the population of England, doctored the bodies as well as the souls of his converts. He wrote a book named *Primitive Physic,* a small octavo volume of just over one hundred pages, which appeared in 1747. In the preface to this book, written in the strong, lucid and simple language of which Wesley was a master, he denounced the medical practitioners of his day in unmeasured terms of contempt. He drew up and published "a plain and easy way of curing diseases," which gave several hundreds of remedies classified for some two hundred and fifty different ailments. He added: "I have only consulted herein, experience, common sense, and the common interest of mankind. And supposing they can be cured in this easy way, who would desire to use any other? Who would not wish to have a physician always in his house, and one that attends without fee or reward? To be able, unless in some few complicated cases, to prescribe to his family as well as himself."

The receipts given in *Primitive Physic* consist mainly of ancient traditional remedies handed down through generations of wise women. Not a few may be found in the old Herbals. Many of them are extremely quaint. This one for asthma, for instance: "Live a fortnight on boiled carrots only. It seldom fails." Or this for ague: "Apply to the stomach a large onion slit. Or eat a small lemon, rind and all." Or this for whooping cough: "Rub the feet thoroughly with hog's lard, before the fire, at going to bed, and keep the child warm therein. Or rub the back at lying down with old rum. It seldom fails."

No fewer than fifteen remedies are given for "a consumption," some of which are very strange and curious. For example: "Take no food but new buttermilk, churned in a bottle, and white bread," or, "every morning cut up a little turf of fresh earth, and, lying down, breathe into the hole for a quarter of an hour," or, "drink twice a day two spoonfuls of juice of water cresses." At any rate, none of these remedies were harmful and, combined with faith, might and no doubt did good. It may be pointed out that there is almost a fashion in drugs, and most of the drugs which were employed by the old time doctors have been discarded in spite of the fact that many of them were considered to be and seemed to have proved themselves of signal service. Perhaps the famous and witty French physician was right when, in giving advice to a newly fledged young doctor, he said, "Hurry up, my boy, and prescribe this remedy whilst it is doing good."

There appears to be some signs that certain simple old fashioned remedies are coming into vogue again. The medical man, too, of fifty years ago, although he could lay no claim to being scientific, was usually a good clinician. He had been trained in the hard school of experience. Today, perhaps, he is more probably too much of the scientific man and not enough of the clinician. However, other times, other manners.

In connection with the theme of old time practice of medicine, it is pertinent to refer to a paper, one of a series, which appeared in the London *Lancet* November 1st last by Sir James Mackenzie, who is now doing research work at the St. Andrew's Institute of Clinical Research, founded by him. He says that, in his opinion, little more is known about disease than forty years ago. He goes on to say that if the present state of knowledge and practice regarding these diseases, the common diseases of the country, be compared with the state when he entered practice forty-five years ago, there is some difficulty in recognizing where progress has been made. The socalled minor ailments, some of which are the beginnings of serious ill health, the numerous digestive troubles which do so much to impair health, are just as common and as little understood now as then, and we are just as helpless in the face of grave acute disease. Progress in medicine may have been somewhat slow, but it seems that Sir James Mackenzie is too pessimistic. For example, in the domain of disease, which he has largely made his own, that of the heart, mainly through his own work manifest progress has been made. He contends that the beginnings of disease are not recognized so that

these may be nipped in bud, and serious conditions prevented from developing. He also holds that too much attention is paid to laboratory research and not enough to clinical work. One should be the complement of the other. The practitioner of forty or fifty years ago had perforce to be a good clinician, as observation, supported by practical experience, was all he had to rely on. The consequence was that then good clinicians were numerous. Nowadays, perhaps, the pendulum has swung too far in the opposite direction and reliance is largely placed on the results of laboratory investigation. Research and clinical work should go hand in hand, but thorough clinical training should never be neglected and some of the old time medical teaching and methods are far too valuable to be omitted or treated inadequately.

THE PATHOLOGY OF MISERY

Investigations carried on in 1919 by Professor Demoor of the Brussels School of Medicine showed that the average weight of all children of all ages had been retarded. For height the children were from one seventh to one half year behind the normal attainment for height and about a year for weight. The retardation of development was especially marked among the poorer population. This was part and parcel of what has been termed the pathology of misery, for which the primary cause was war. A like condition existed and exists in Austria and Germany.

A different picture is presented by the children of England, where, since 1913, there has been, according to Dr. Hamer, the county and school health officer for London, a steady improvement in the general physical condition of school children. In Belgium, along with slowing up of growth there went an increase in diseases of all kinds. In London, according to Dr. Hamer's 1921 report, the percentage of rickets among entrants (school life in England may begin at three or four years) has fallen from 22.6 to 14.1 per cent., ten per cent. more children have sound teeth than was the case eight years ago, and the general evidence of disease is less.

England also was at war, but the war brought with it more work and more pay for the parents and more and better food for the children than they had ever known. It was an artificial condition and there may be a relapse with present unemployment and high cost of living but in the meanwhile it has afforded a striking object lesson, especially when contrasted with the companion picture from the continent, of what economic conditions must be kept in mind in all health work and in any statistical conclusion as to what has been done or is being accomplished along lines of public health.

Feeding and housing are basic conditions for health, and feeding and housing cost money. Any agency that reduces the cost of food or lowers the rent of houses (or furnishes a more sanitary home for the same cost) is as much a power for health as all the professional hygienists and, in fact, the work of the latter is of little avail if it leads not to the former. A justified strike for higher wages may be at the same time a strike for higher health for those who are dependent on the striker. We have not such dire social conditions in this country as exist in Europe, though in many of our cities the pathology of misery exists to a greater degree than we wish to think. Moreover, there are huddled here a horde of children who, in the homes of their forbears would at least have enjoyed the conditions of country life and a better choice of food. Better wages, better homes, better schools, better playgrounds are more needed than larger and more palatial hospitals for overcoming what Newsholme has well styled "the horrors of peace."

THE PSYCHOPATH IN DRAMA

Fiction and the stage contain numerous excellent portrayals of psychopathic types. A notable example of this is the character of Rufe Pryor, acted with remarkable realism by John Hamilton in Hatcher Hughes' vivid folkplay of the North Carolina mountains, *Hell-Bent fer Heaven*.

Rufe is a case of constitutional psychopathic inferiority of the inadequate personality type, developing into the criminal type with religious compensation under the influence of aroused and inhibited sex instinct. Coming from a family with a reputation for lack of courage—his grandfather was reputed to have knocked out his front teeth to escape enlisting in the Confederate army—and having lost his mother when he was an infant, Rufe is the pathetic victim of a bad heredity and a neglected childhood. His neighbors and the husky, practical-minded men of the mountain family with whom he lives as a sort of boundboy, consider him "quair," "womanish," "tetchy," lazy and hypocritical, the last especially because he has lately fallen in love with the pretty Jude and simultaneously "got religion." The women of the family are inclined to pity him, take his part, and believe in his socalled spells and visions of Heaven. His desire to win Jude for himself expresses itself in an obsession to do away with her betrothed, the handsome, vigorous son of the family, whose wholesome personality is presented in striking contrast to Rufe's frail, twisted body with its burning eyes and erratic but

perversely brilliant mind. The love object is quickly made identical by the conscious mind with religious adoration, the orientation coming, perhaps, from the fact that the girl was first seen in church. The whole series of subsequent criminal machinations into which Rufe is led become, to him, the carrying out of divine will to rid the earth of the wicked revilers of his faith and to give him his "spiritual bride." The playwright shows us the tremendous egoism of selfdefensive origin usually present in such a case; the conversion of suggestive incidents, such as a timely clap of thunder, into "messages from on high," and their subsequent development into plans and acts to serve personal ends; the wild fluency, with frequent poetic beauty, in prayers and religious ecstasies, changing almost instantaneously to subtle lies and preternatural cunning in avoiding discovery; the utter callousness to the harm or even death of those conceived as obstructions; and the final selfexposure through the very keynotes of the maladjusted personality (which always tends to self-destruction), namely, constitutional cowardice and religious overcompensation, inducive of superstitious terrors. Poor Rufe escapes from the situation in the only way open to the congenital craven—by running away.

The dramatic conception and presentation of so vivid and truthful a personality study is a significant indication of and tribute to the present day spirit of social mindedness, and the earnest desire on the part of many thinking people to know and understand, from a scientific and therefore practical point of view, more about human nature and the causes operating back of its failures, faults, and even crimes, as well as its successes, hopes and aspirations. Poor Rufe stands forth an eloquent witness to the urgent necessity for a widespread mental hygiene movement. Had he been given, throughout the early years of his life, proper attention, both physical and mental, it is possible that, in spite of the hereditary taint, and in view of his sensitive nature, unusual intellectual potentialities, and artistic sensibilities, combined with the social interests manifested in his mania for saving souls, the tendencies that became "hell bent" might have been transformed into traits of character of service and value to the community.

NEW JOURNAL DEVOTED TO CANCER

Cancer, a Practical Quarterly Journal Devoted to the Best Interests of Cancer, is the title of a new publication of F. A. Davis Company, of Philadelphia. Dr. L. Duncan Bulkley is editor, with Dr. Clarence D. Daniels as associate editor, and Dr. A. Hirst Appel, Dr. Seelye W. Little, Dr. Russell W. Kelsey, Dr. Edward Preble, and Dr. Thomas L. Stedman as collaborators. Dr. Bulkley states in the foreword that "the aim and purpose of this publication are to concentrate in convenient form all that will conduce to a bitter knowledge of cancer as a disease, and its cause and proper treatment, in its different forms and manifestations in various regions of the body, and thus to aid in lowering its steadily rising morbidity and mortality." The journal comprises four sections—original articles, editorials, clinical reports, and reviews of literature.

The initial October number contains contributions as follows: Audi Alteram Partem, by Dr. Stedman; Nature and Cancer, by Dr. Otto Lerch; Considerations of the Cancer Question, by Dr. Daniels; Why I Favor the Systemic Treatment, by Dr. Appel; The Cancer Situation of Today, by Frederick L. Hoffman, LL.D., consulting statistician of the Prudential Insurance Company, and Cancer Death Rate in New York City During 1922, by Dr. Bulkley, who has also a clinical report on a case of cancer of the cervix treated medically. The book reviews are followed by a review of recent literature on the subject of cancer, including statistical data, etiology, immunity, and treatment.

INTERNATIONAL CLINIC OF PLASTIC SURGERY

During and immediately after the war, surgeons gained so much knowledge in obliterating or rendering less unsightly the many disfigurements and deformities from shot and shell wounds that a clinic has been organized in London to preserve, improve and impart this knowledge. Another object which this clinic has is exposure of the quack and of the socalled beauty specialist.

The International Clinic of Plastic Surgery is worldwide in scope, a no profit institution, open to all classes, and with a scale of fees accommodated to the means of the patients. Dentists, artists, and sculptors cooperate with the surgeons in the work. The clinic will issue a quarterly journal dealing with plastic surgery. All financial surplus is to be devoted to tuition, improvements, pensions for the staff, etc. The institution is temporarily housed in a part of St. Andrew's Hospital.

The only students to be admitted will be surgeons of unquestioned standing, for the courses given are in postgraduate work. The director of the clinic is Dr. H. D. Gillies, who was head of the surgical unit of the British Army in charge of reparative cases during the war. The other English member of the teaching and operating staff is Dr. T. Pomfret Kilner. Dr. J. Eastman Sheehan, of New York, and Dr. Ferris N. Smith, of Grand Rapids, Mich., are the American members, and Professor Lemaitre the French.

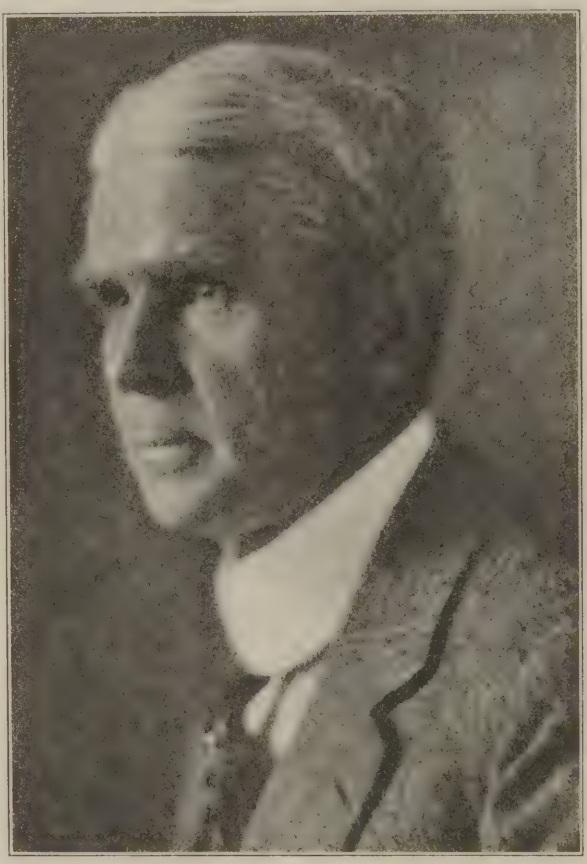
In order to exclude any commercial possibilities from among the staff, all American students must be certified by Dr. Sheehan and Dr. Smith. Qualifications for prospective American students are the same as for membership in the American College of Surgeons, and for English students those of the Royal College of Surgeons. Certificates will be granted upon the satisfactory completion of the courses given at the clinic.

Obituary.

LUTHER EMMET HOLT, M.D.,

New York.

Dr. Holt was born at Webster, N. Y., on March 4, 1855. He received the degree of A. B. from the University of Rochester in 1875 and graduated from the New York College of Physicians and Surgeons in 1880. After an internship in Bellevue Hospital he immediately took up thestudy of diseases of children in an intensive form. Early in his medical career he held the position of attending pediatrist at the New York Infant Asylum, New York Nursery and Childs' Hospital, and the Foundling Hospital. He was professor of diseases of children at the New York Polyclinic Medical School and Hospital from 1890 to 1901 and clinical professor of diseases of children at the College of Physicians and Surgeons from 1901 to 1920. He was a member of the board of directors of the Rockefeller Institute since 1902. The latter institution conferred on him the degrees of Sc. D. and LL. D. The Red Cross appointed him a member of the committee to attend the medical Conference at Cannes in 1919.



L. Emmett Holt.

He was a charter member of the American Pediatric Society and held the office of president in 1898 and 1923. The high place that this society holds in the medical world today is due in no small measure to his advice and counsel. Holt's textbook on *Diseases of Children* has passed through eight editions and is universally accepted as a standard on this subject. His small book on *The Care and Feeding of Infants* is in its twelfth edition and has been translated into four languages, Polish, Spanish, French, and Chinese. His contributions to medical literature on pediatric subjects were voluminous. Dr. Holt was appointed physician in charge of the Babies Hospital in 1889. The hospital at this time occupied a small one story house and had twenty beds. To this institution he devoted his time and talents and largely through his efforts the present building was financed and erected and he has always directed its policies and shaped its destiny. He gave to it the best that was in him and the Babies Hospital will always stand as a monument to his memory.

Through his teachings and publications Dr. Holt wielded a greater influence on child life and has come in closer contact with more children in the home than any other man of his day and generation.

It was a rare privilege to be a student of Dr. Holt. Always a clear thinker, with an analytical mind and an unusual ability for concise expression, he not only taught his students pediatrics, he taught them how to think. It is difficult to state the most striking individual characteristics of such a man as he.

SIR NAPIER BURNETT, M.D.,

London, England

Sir Napier Burnett, chief executive officer of the Order of St. John of Jerusalem in England and of the British Red Cross Society and director of Hospital Services in England and Wales, died at his home in Hampstead, London, on Christmas morning. A few months ago he was obliged to return to England from the continent to undergo an operation which was performed by Professor Wade in Edinburgh. Complications supervened and he never rallied. Twelve days before his death he was removed, at his own request, to his London home.

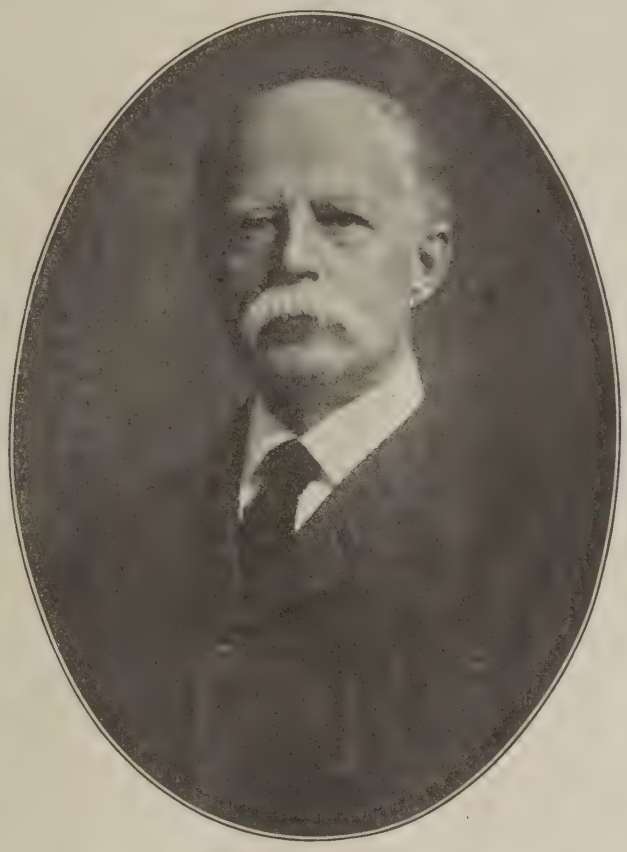
Sir Napier was born in 1872 at Frazerburgh near Aberdeen and received his medical education at Glasgow University where he took the M. D. degree in 1908. He came to Newcastle and began practice there as a consulting obstetrical surgeon. He rendered invaluable service to Newcastle Maternity Hospital and made a close study of hospital organization, and the knowledge gained was in after years of value to the nation.

When the war broke out, with Professor Rutherford Morison he was largely responsible for the organization of the Northumberland War Hospital. When the war was over he returned to Newcastle but still had in his mind the possibility of coordinating the work of the voluntary hospitals and continued his efforts with this aim in view. In 1920 he was appointed Director of Hospital Services under the new scheme whereby the Red Cross was to be stabilized and continue its labors in time of peace. He did much for the voluntary hospitals, mainly by improving their organization. Sir Napier Burnett was really a great organizer and his work during and after the war in endeavoring to stabilize the voluntary hospitals was a national service and won for him national fame. At this juncture he could be ill spared.

EDWARD LAWRENCE KEYES, M.D.,

New York

Edward Lawrence Keyes, A. M., M. D., LL. D., K. S. G., of Tuxedo Park, one of the foremost genitourinary surgeons of this country, died at his New York City residence on January 24th after a brief illness from pneumonia. He was born in 1843 at Charleston, S. C., and was the son of General Erasmus Keyes, U. S. A., descendant of an old New England family. After graduation from Yale in 1863, he served as captain in the army, on his father's staff. The war over, he studied medicine at New York University, and, after graduation, dermatology at the University of Paris. Upon his return to the United States, he was appointed lecturer on that subject to Bellevue Hospital Medical College, then the leading medical college of the country, where he delivered in 1870 the first course of lectures on dermatology given in the United States. For a few years he served as visiting surgeon to City Hospital, then, in 1875, was transferred to Bellevue, where as professor of dermatology, syphilology and genitourinary surgery he established the first ward in this country for genitourinary cases. Dr. Keyes was, during the subsequent fifteen years of incumbency, the most influential teacher of syphilis and genitourinary diseases in the United States.



EDWARD L. KEYES, M. D.

Probably the most striking and important original contribution to medical science was the method of treating syphilis with mercury. Up to that time mercury in such treatment had been found toxic, because usually administered in large doses. Dr. Keyes demonstrated before the International Medical Congress at Philadelphia in 1876 that mercury given in continued small doses in treating syphilis was not a poison but a tonic. His method of treatment was the prevalent one in this country until supplanted by injections. He was also notable as one of the first prostatectomists. Fuller, together with McGill, Fryer and Squier, one of the originators of suprapubic prostatectomy, began working along this line and wrote papers on the subject while he was an assistant in Dr. Keyes's office, and so reflects many of the latter's views.

Dr. Keyes was the author of a number of important works on genitourinary diseases. Beginning his medical career as assistant to Dr. William H. Van Buren, son in law and successor to Dr. Valentine Mott, he collaborated with the former in writing the well known textbook on genitourinary diseases and syphilis, first published by Appleton in 1874. Revised editions of this work appeared after Dr. Van Buren's death under the name of Dr. Keyes alone and also that of his son, Dr. Edward Loughborough Keyes, of New York City. This is still a classical textbook in medical schools and hospitals. Among other works by Dr. Keyes are *The Tonic Treatment of Syphilis, Some Fallacies Concerning Syphilis,* a brief but brilliant guide to treatment, and *Venereal Diseases,* subsequently issued under the joint authorship of Keyes and Chetwood. He was also the author of papers and articles on these subjects and on suprapubic prostatectomy, stricture, urinary fever, and stone.

Dr. Keyes was the founder and first president of the American Association of Genitourinary Surgeons, and at one time vice-president of the New York Academy of Medicine. He was a member of the International Dermatological Society and of the Association Française d'Urologie. Knighthood in the Order of St. Gregory was conferred upon him by Pope Pius X. He was a trustee of the Roman Catholic Church and Orphan Asylum, and served as director of the Columbia Trust Company and of the Fidelity Bank. His oratorical ability was attested by the fact that he was chosen to speak at the opening of the Forty-Third Street building of the New York Academy of Medicine and of the Brady Urological Institute at Johns Hopkins University, Baltimore.

An outstanding fact in Dr. Keyes's medical career was that a great many of his studies and scientific investigations were perfected while he was still a very young man.

Perhaps the dominant characteristic of his personality was his broad humanity. As teacher and practitioner he always emphasized the phase of personal relationship. His clientele included patients from all stations of life, to all of whom he gave of his best with unfailing interest, and sometimes with neglect of material advantages. A supreme honesty and a delightful sense of humor were other qualities that help to explain his many lifelong friends, and the honor, esteem, and admiration in which he was held by the members of the medical profession, to whom his death comes as a great and much deplored loss.

News Items.

New York Physicians' Association Election.—Dr. Charles A. Spivacke was elected president; Dr. Jacob Braun, first vice-president; Dr. Leopold Marcus, second vice-president; Dr. Aaron Brown, treasurer; Dr. Joseph Ziporkes, secretary, and Dr. Max Soletsky, recording secretary.

Dr. Chevalier Jackson Operates on Infant.—Dr. Chevalier Jackson was the surgeon who successfully removed a tack from the lung cavity of an eight months old baby. Dr. Jackson performed the operation without the use of an anesthetic. The tack was removed by means of the bronchoscope and forceps.

Fifth Harvey Lecture.—Dr. Evarts A. Graham, professor of surgery, Washington University, School of Medicine, will deliver the fifth Harvey Society lecture at the New York Academy of Medicine, on Saturday evening, February 9, 1924. His subject will be Alterations of Intrapleural Pressure and their Significance.

Italian Radiological Congress Head.—The fifth Italian radiological congress was held at Palermo, October 18-21, 1923, at the Palermo University. Prof. G. Scaduto presided. Reports were read by Prof. Gortan of Triest on pneumoradiography and Prof. Boidi-Trotti of Turin on radiodiagnosis of urinary apparatus. Prof. Massimiliano Cortan was elected chariman of the April 1925 session to be held at Triest.

Association for the Prevention and Relief of Heart Disease.—At the annual meeting of the Association for the Prevention and Relief of Heart Disease, held in New York on January 16th, Dr. Nathan E. Brill, Dr. Lewis A. Conner, Dr. B. S. Oppenheimer, Dr. Vernon Munroe and Mrs. A. F. Tiffany, the latter replacing Mrs. L. Blagden, were elected as board of governors for a term of five years. Dr. Haven Emerson was elected president; Dr. Robert H. Halsey, vice-president; Dr. William St. Lawrence, secretary; and Dr. Edwin O. Holter, treasurer.

National Committee for Mental Hygiene Election.—Dr. Frankwood E. Williams was reelected medical director of the National Committee for Mental Hygiene at the annual meeting of the board of directors, held in New York City, on December 28th. The following were elected members of the Executive Committee: Dr. William L. Russell, Dr. Walter E. Fernald, Dr. Stephen P. Duggan, Dr. William A. White, Dr. Charles P. Emerson, Dr. C. Floyd Haviland, Dr. Arthur H. Ruggles, and Mr. Matthew C. Fleming. Dr. William H. Welch, president of the National Committee for Mental Hygiene, presided.

Bellevue Medical School Gets New Gifts.—Dr. Samuel A. Brown, dean of the New York University Medical School, announces $60,700 in donations, $40,000 from the estate of Mrs. Egbert Le Fevre, widow of a former dean of the college. The Le Fevre Deanship Fund also received an anonymous gift of $1,200. An anonymous gift of $11,000 was received for the Medical College dispensary endowment fund. A gift of $7,500 came from Mrs. Bettie Fleischmann Holmes; $2,500 for the New York University campaign fund and $5,000 for work in therapeutics. Mrs. W. K. Vanderbilt gave $1,000 for the cardiac clinic of the Medical College. These gifts, following that of $50,000 from Mrs. Charles M. Sherrill, announced recently, made a total of $110,700 received by the Medical College in the last week. Mrs. Sherrill previously had given $90,000 to be devoted to the Edward N. Gibbs memorial x ray fund.

Personals.—Dr. Walter R. Moore, of St. Joseph, Mo., has been awarded one of the resident and travel scholarships for physicians by the American Child Health Association.

Dr. Georges Portman, of the University of Bordeaux, will lecture in New York, Boston, Philadelphia, Montreal, and Quebec during the winter.

Dr. George David Stewart will continue as president of the New York Academy of Medicine in 1924, continuing his two year term; Dr. Herbert S. Carter has been elected vice-president to serve three years; Dr. D. Bryson Delavan has been made corresponding secretary for three years, and Dr. Seth M. Milliken, treasurer.

Dr. William T. Oppenheimer, chief surgeon of the Chesapeake and Ohio Railroad, was presented with an automobile by fellow members of the association in appreciation of his work.

Medical School Discussed for Porto Rico.—Six representatives of Porto Rico have come to discuss with the officials of Columbia University the establishment of a medical school in Porto Rico as part of the university there.

Health Officer Honored.—Dr. J. D. Dowling, health officer of Birmingham and Jefferson County, was awarded the *Birmingham News* loving cup, under direction of a committee of citizens who declared Dr. Dowling had "accomplished most for his community" during 1923.

Rats Carry Plague Into Russia.—The bubonic plague has leaped over the borders of Asia into extreme Southeastern Europe and is threatening the Astrakhan district, according to the *Moscow Workman's Gazette.* Ninety plague spots have been discovered and a horde of plague infested rats is spreading the epidemic along the Volga. A commission has been created to combat the plague danger.

American Surgeon Wanted in Guatemala.—Rev. James Hayter reports to the Presbyterian Board of Foreign Missions at 156 Fifth Avenue, New York, the need of an American surgeon to volunteer for service at the Guatemala Station, Central America, where the demands upon the hospital have reached such a state that it has been found necessary to restrict the number of major operations performed.

Austrian Soldiers to Aid Medical Profession.—Apparatus of various kinds for the study of the voice and speech, including the arc light, laryngobronchoscope, recording drums, speech recorders, breath recorders and equipment for the study of speech in epilepsy, general paralysis, disseminated sclerosis and other nervous diseases, is part of the equipment mapped out by the Austrian Ministry of War to be made by soldiers who have no other trade in their spare time. They will be taught by competent mechanicians.

Infant Mortality Lessened.—Marked reduction in the infant mortality rate at Thetford Mines, Quebec, following a three years' demonstration by doctors and nurses has led the Provincial Government to make an appropriation of $500,000 to establish a chain of clinics throughout the province. The work at Thetford Mines started with a maternity centre opened by the Metropolitan Life Insurance Company early in 1921. At that time, the infant mortality averaged 95 out of 281 babies born, one baby out of every three. Statistics for 1923 show that only 22 out of 300 babies died during the year.

Institute for Orthopedic and Metabolic Diseases Offers Lectures.—The syllabus of a course of lectures with clinical and laboratory demonstrations to be delivered at 498 West End Avenue, New York City, under the auspices of the Institute for Orthopedic and Metabolic Diseases has been announced for the 1924 session from January to March. The lectures are given on Tuesdays and Thursdays, from 8:30 to 10 p. m. The following physicians will lecture during the session: Henry Keller, M.D., orthopedics; Benjamin Jablons, M.D., metabolism; Louis Faugères Bishop, M.D., cardiology; I. W. Held, M.D., and Harris Weinstein, M.D., gastroenterology; Mark J. Schoenberg, M.D., ophthalmology; Charles Goodman, M.D., and Maximilian Lewson, M.D., surgery; Joseph Coleman, M.D., diseases of nose and throat; E. D. Friedman, M.D., and Marcus Neustaedter, M.D., neurology; Charles Herrman, M.D., pediatrics; C. M. Sampson, M.D., Maj., M. C., U. S. A., physiotherapy; L. T. Le Wald, M.D., röntgenology, and Max Taschman, M.D., tuberculosis.

New Discoveries.—Dr. Manueline of the Pasteur Institute has succeeded in isolating the rabies microbe after years of experimenting, according to his published report. Pasteur, who discovered the antirabies serum, did not succeed in isolating the microbe, his research being interrupted by death. His work was carried on by his disciples at the Paris institute and his theories now receive final confirmation.

Dr. Isaac Fried, of Breslau, says he has discovered the means of ascertaining the sex of a child four months before birth, the French Academy of Medicine reports. The method employed is based upon a Wassermann reaction of the blood. A special committee has been appointed by the Academy, to investigate Dr. Fried's findings.

Dr. A. R. Dochez, of Columbia University College of Physicians and Surgeons, and Dr. Francis G. Blake, professor of medicine at Yale University School of Medicine, announce in the daily press the results of their research of the serum for the cure of scarlet fever. While Dr. Dochez stated there were no grounds for stating the serum was a definite curative agent, he reports success in experiments on animals and in nineteen cases.

Foreign Correspondence.

VIENNA LETTER

(From our own correspondent)

VIENNA, *October 13, 1923*

PSYCHOLOGY OF STARVING PEOPLE

Professor Frank, of Charkov, filled the position of director of a large hospital during the time a terrible famine ravaged the southern part of the Ukraine. In this capacity he had ample opportunity to study the effect of continuous starvation upon the human body and soul. This eminent Russian scientist has described his experiences in an article published in a Russian weekly. The observations of a scientist are recorded in this article and are absolutely authentic.

The famine broke out in Ukraine quite unexpectedly, and it affected several millions of men at once. Epidemics of disease and the famine have, at some places, devastated ten to twelve per cent. of the population. Large villages became quite depopulated, and such large towns as Cherson lost the majority of their population. The famine was most serious in those districts where war, revolution, civil war, and uprisings have ravaged the country. Of course, starvation left a very deep mark on the psyche of the population. In the spiritual life of the starving people Dr. Frank distinguished two stages, one of excitement and one of depression. Naturally these two states could not be sharply distinguished from each other. They presented themselves in different ways according to the individuality and physical structure of the persons affected by famine. The bodily and mental excitement experienced in the first stage of starvation showed some resemblance to the attitude of those under the intoxicating effect of alcohol. In the beginning the body as well as the soul experiences a pleasurable excitement, rejoicing in the eventual receiving of foods, and during this period they feel themselves capable of the greatest effort. The spirit is filled with enthusiasm, and the person becomes exceedingly talkative. The drunkenness, however, continues, and nothing remains but depression, the entire breaking of body and soul, and those fighting with starvation of longer duration become idiotic and bestial. In this stage they are ruled by dark instincts, such as migrating from home. The roads and railway lines leading out from the districts inflicted with famine were crowded with these unfortunates, and most of them did not know where they were, where they were going, and what were their plans. Many of them, who spent their nights on the rails, were crushed by the trains. Many crimes committed by the victims in this stage bore the stamp of absolute aimlessness.

Dr. Frank describes the second stage with terrible realism, on the ground of personal experiences. He writes that religious and moral commands and superstitions are annihilated. There is no family life, no social ties. The most frightful egoism, the utter indifference towards the life of another, even towards the next of kin, also toward impotent old men and children, kill every feeling of responsibility in the starving. One mother has spoken even in the first stage of famine as follows: "I have always to fight with myself, when I have to share the piece of bread, which I intended to consume myself, with my children." A man was found beside the corpse of his elder brother, whom he had killed. The knife was still in his hand, and also a piece of raw meat which he had cut out from the body of his brother. It was an everyday occurrence for children, caught in the act of stealing, to be murdered. Unchecked cruelty dominates people.

Most shocking, however, was the eating of men's flesh—cannibalism. This has been mostly met with in women. In many instances mothers killed their own children and ate their flesh. Owing to the change which has taken place in the minds of the starving men by reason of the circulatory disturbances caused by the want of food, the depression grows to such an extent that human life loses all value for these men, and the other man is a mere object, that they kill in order to preserve their own life. Several mothers, who have eaten the flesh of their own children, confessed to Dr. Frank: "He would have died, too. Thus we have saved at least our lives." Such a declaration from a mother's mouth is proof that she could not be held accountable for her deed, and the state of her mind was unsound. Dr. Frank had occasion to see some of these persons after being cured from starvation, having come to Red Cross hospitals where there was sufficient food. They recovered bodily but not mentally, so that they had to be put in insane asylums. Later on it was but natural that cannibalism led to a regular trade in human flesh. These facts show the degree of apathy and the entire disappearance of human feeling in the last stages of starvation.

Some German journals have republished Dr. Frank's article, and they add to it that the first stage of starvation is already present in Germany, being expressed in a gradual mental excitement. There are journals, too, which give expression to a fear that the second terrible stage of starvation will occur in Germany, with all its dreadful effects.

LONDON LETTER

(From our own correspondent)

LONDON, *December 17, 1923*

TUBERCULOSIS IN CATTLE

Tuberculosis has long been prevalent among British cattle, which may account for the comparative frequency of intestinal tuberculosis in children in this country. Active alarm is being expressed by cattle owners and breeders at the wholesale slaughter of cattle which is taking place at the present time owing to tuberculosis and foot and mouth disease. On December 14th last veterinary officials and representatives of public bodies and veterinary societies from all parts of the United Kingdom, together with representatives from Canada, Australia, and South Africa, met at the Royal Sanitary Institution in London to discuss the question of tuberculosis in cattle, and the desirability of allowing the introduction of breeding heifers from Canada if certified free from tuberculosis. Alderman W. P. Neal, late chairman of the Cattle Markets Committee of the City of London, in opening the discussion stated that the matter

of tuberculosis in cattle was of great importance to everyone in the United Kingdom, because it had been shown by science that the bacilli of tuberculosis from cattle could be transmitted to human beings. That being the case it was idle to anticipate that the disease could be eradicated from human beings until tuberculosis in cattle could be arrested and finally eliminated. It was a matter for some surprise that neither the medical profession nor the veterinary profession had prosecuted research so as to enable them to determine what steps were really necessary either to arrest or eliminate the disease. After a considerable amount of discussion two resolutions were passed. The first advocated an investigation by the Ministry of Agricuture into the spread of tuberculosis among cattle and the second declared that it was desirable to allow the introduction of breeding heifers from Canada, subject to a Government certificate that they were free from tuberculosis.

TUBERCULOSIS SETTLEMENTS

In an emeritus lecture given by Sir Kingston Fowler at the Middlesex Hospital, London, on December 13th last, it was contended that sanatorium treatment was not the failure it was now generally said to be. From the industrial point of view Sir Kingston admitted it was not a success, but where patients had the means to devote sufficient time to the treatment it had remarkable results. He ridiculed the idea that working men after a brief stay in the sanatorium could be discharged to do "light work in the open air," and advocated the formation of village settlements in which patients could be gradually fitted to do work equivalent to that performed by them before their breakdown. Such colonies could not be selfsupporting, but just as a people which would not enforce vaccination must build smallpox hospitals, so a nation which tolerated the existence of slums, the breeding places of tuberculosis, must be prepared to pay for the maintenance of tuberculosis settlements.

SMALLPOX AGAIN PREVALENT

The smallpox situation in this country is once more menacing. A sharp epidemic has occurred in Gloucestershire, and outbreaks have been reported from Derbyshire and Nottinghamshire of a severe type. It is alarmingly instructive to realize that the notifications of smallpox during the past two years have been increasing steadily. This signifies that the disease is regaining its hold on the country, a result foreseen and foretold by those cognizant of the neglect of vaccination throughout the country.

CHILD WELFARE CENTRES

On December 15th last two child welfare centres of the most modern type was opened, one in Shoreditch in the East End of London, and the other in Liverpool. Both form part of the experimental scheme of the Carnegie United Kingdom Trustees, initiated in 1918, and involving altogether a capital cost of £200,000. The principle underlying these centres, as was the case with those recently opened in Birmingham and Motherwell, a suburb of Glasgow, is that mothers and expectant mothers should have a place to which they could go for advice, an institution as different as possible from a hospital. The hospital is for the diagnosis and treatment of disease. The Carnegie centres are intended to be of a preventive character designed to make treatment unnecessary by providing in advance of possible illness, institutions in which the mothers may be taught how to bring healthy children into the world and maintain them in health during infancy and childhood. A main feature of these institutions is the training of health visitors, who are taught how best to advise as to the investigation of bad housing conditions, and how poor mothers may best utilize the scanty resources which they have in the way of furniture, food and clothing.

BRITISH ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE

The date of the next meeting of this association to be held in Toronto next year, was provisionally announced for September 3d to 10th, but has now been changed to August 6th to 12th. The meeting will be under the presidency of Sir David Bruce. Preparations are already in active progress, both in Toronto and in London. The American Association for the Advancement of Science intends to hold a short meeting in Buffalo immediately before that of the British Association in Toronto, and reciprocal arrangements are being made for the admission of members of either association to the meetings of the other.

SCHOOL FOR CRIPPLES

At Chailey, in the heart of Sussex, are the Heritage Craft Schools for Cripples. In these schools some two hundred crippled children of both sexes receive skilful medical treatment, and are trained in useful crafts fitting them to hold their place in the battle of life. These schools were founded in June, 1903, and over eight hundred little cripples have passed through them. A special feature of the remedial treatment given is the sunlight or rather indirect sunlight treatment. The institution is thoroughly equipped with heliotherapeutic lamps by means of which the sun rays are utilized for curative purposes. The results obtained already from this treatment have been highly beneficial and Sir Robert Jones, who is chairman of the board of surgeons at Chailey, is confident of still more wonderful achievements in the near future. Surgeon Commander Murray Levick, R. N., who was associated with the late Captain Scott in the Antarctic, is in charge of the light installation. There has been opened recently in this institution what is known as a song school intended for the training of the choir. Below the song schoolroom there is a cloister which will be used for the open air treatment of the children, so that while the crippled children are lying in their beds in the cloisters they will be able to hear the choir singing in the school above.

COCAINE TRAFFIC CHECKED IN LONDON.

It may be said that the cocaine habit is quite a modern evil in this country at least. It was introduced during the war when it was almost as easy to buy cocaine as a cup of coffee. The habit spread rapidly as the drug was cheap and plentiful. The army authorities and the police made the menace perfectly clear to the Government, and a regulation was passed making it an offense punishable by imprisonment for six months to sell cocaine to any member of His Majesty's forces. It was then discovered that the

drug was being eagerly bought, not only by soldiers and sailors, but also by civilians, both men and women, and the regulation was amended, making it an offense for any unlicensed persons to buy or sell cocaine. More severe restrictive regulations were passed but with no effect and the illicit traffic continued. Undesirable aliens, especially Chinese and colored men, who had access to clubs of a questionable character, trafficked in the drug. The risk was taken because of the enormous profits that could be made out of the sale of cocaine. In Germany, where much of it was procured, it could be bought at the wholesale price of £1 to £5 an ounce and smuggled over to this country with comparative ease, and obviously the infliction of a short term of imprisonment was not likely to deter men who might make big fortunes by the traffic. Consequently the British Government a few months ago passed a new law embodying fresh regulations and increasing the sentence on indictment to ten years penal servitude and a fine of £1,000. It is now an offense to offer to supply cocaine, no matter to whom the offer is made. No one is permitted to export cocaine unless an import license is produced from the Government of the country to which he intends to send it and, of course, no unlicensed person is allowed to import the drug. This act has virtually killed the cocaine traffic in Great Britain.

LATIN AMERICA LETTER

(From our own correspondent)

BALBOA HEIGHTS, C. Z., *December 21, 1923*

OPENING OF THE COLON BRANCH OF SANTO TOMAS HOSPITAL

As noted in a previous letter, the Panamanian government is creating four small hospitals in the interior of the Republic to handle emergency and other cases which cannot or should not be transferred to Santo Tomas Hospital in the city of Panama. In Colon, an old building which has been used in the past as a court and a fire station has been transformed into a good hospital for the care of the sick of the Province of Colon. It is called the Colon Charity Hospital and is under the direction of Dr. Joseph Perez, who is assisted by Dr. Pablo Revesz. Although this hospital has just been opened, its thirty ward beds and eight private room beds are filled and a considerable amount of dispensary work is being done in addition. This has materially lessened the work which the free clinic of the Cristobal Woman's Club has been doing heretofore, and is of very great assistance to the sanitary authorities since the small hospital also acts as a health centre.

ALASTRIM STILL CONTINUES

Apparently the restrictive measures which have been enforced against the mild, atypical smallpox which has been moving up and down the West Indies for the past three or four years have succeeded in doing little in an eradicative way. At present the disease is reported as present in Jamaica, Guadaloupe, Cuba, and Martinique. Dominica claims to be at last free from it and recently held special services in all churches in thanksgiving for the freedom of the island from alastrim. British Honduras is reported as free of alastrim and Lieutenant Colonel H. Basil Newman, C. M. G., M. D., of the London School of Tropical Medicine, who has been conducting a series of scientific researches in and around Belize on behalf of the University of London for the past four months, is quoted as saying: "It seemed as though our expedition had struck an unusually healthy year in British Honduras. In previous years there had been occasional outbreaks of fevers of short duration which did not seem to belong to any of the usual types and it was more particularly to investigate these that our expedition was sent out. But during our visit to Belize there was not the ordinary rainy season which usually heralds such fever outbreaks and there were few cases of these undefined fevers."

CONTAGIOUS AND INFECTIOUS DISEASES REPORTED TO THE CHIEF HEALTH OFFICER OF THE PANAMA CANAL DURING THE MONTH OF NOVEMBER, 1923

	Panama	Colon	Canal Zone	Non Resident	Total
Chickenpox	6	3	9	0	18
Diphtheria	1	1	1	0	3
Dysentery	2	2	0	3	7
Hookworm disease	21	6	6	35	68
Malaria	3	5	72	11	91
Measles	50	9	2	1	62
Meningitis	0	0	1	0	1
Pneumonia	35	6	0	0	41
Smallpox	0	0	0	0	0
Scarlet fever	0	0	0	2	2
Typhoid fever	0	1	0	2	3
Tuberculosis	16	4	8	10	38
Whooping cough	4	1	2	0	7
Yaws	0	1	0	1	2

MARITIME QUARANTINE CONFERENCE

As noted in the Latin America Letter of November 2, 1923, the President of the Republic of Panama, Dr. Belisario Porras, has planned a conference of the Maritime Quarantine Authorities of the Pacific Coast of South America for the purpose of standardizing quarantine practice and improving its efficiency. The call for the conference has just been issued by the Honorable Dr. Narciso Garay, the Secretary of Foreign Affairs. Delegates will be sent by Chile, Peru, Ecuador, Panama and the Canal Zone. Observers from the United States, Great Britain, France and many other countries will attend the conference and assist in its deliberations. The chairman of the Panama delegation is Dr. Augusto S. Boyd and the Secretary General of the conference is Surgeon William Colby Rucker, U. S. P. H. S., Chief Quarantine Officer of the Panama Canal.

MEDICAL VISITORS TO THE CANAL ZONE

The list of recent distinguished medical visitors to the Canal Zone includes Dr. H. F. McChesney, of the Brooklyn Hospital, and Dr. Harrison Dyer, the entomologist of Washington, D. C., who, with Howard and Knab, is the author of the three volume work on *The Mosquitoes of North and Central America and the West Indies.*

NEW HOSPITAL EQUIPMENT

The Ancon Hospital is installing a complete, modern hydrotherapeutic room. All apparatus is new and will represent only the most approved types. It will be housed in the basement of the administration building. A similar installation is being made at the Corozal Hospital.

Book Reviews

PNEUMOTHORAX

La Pratique du Pneumothorax Therapeutique. Deuxième édition. Par F. Dumarest et P. Brette. Paris: Masson et Cie., 1923.

Artificial pneumothorax has become so important a measure in the treatment of certain chest conditions, particularly in tuberculosis, that it is not surprising to find a large volume in its second edition devoted exclusively to this subject. The new edition of this remarkable book is a volume of 350 pages. The first of the six chapters is devoted to descriptions of the various apparatus that have been constructed, and, as it should be, honor is given to the inventor, Forlanini, by the reproduction of his first apparatus. To the American reviewer it seems regrettable that our own Murphy's work receives virtually no mention. To Murphy, as well as to the Italian inventor, certainly belongs the honor of having done pioneer work. The only time Murphy's name is mentioned is in the very extensive bibliography, the compilation of which, by the way, must have been a considerable task as it occupies thirty pages of the book. One can find enumerated in the bibliography everything that has ever been written on artificial pneumothorax, including the construction of the apparatus needed for the performance of the operation.

The second chapter deals with the technic, indications, contraindications, etc. Two methods of technic, that of Forlanini and that of Küss, are carefully described. In both nitrogen gas is still recommended for the purpose of inflation, while in this country almost all phthisiotherapeutists content themselves by using ordinary atmospheric air sterilized. The next chapter is devoted to the external signs which are observed on the chest when the collapse has been partial or complete, followed by an exceedingly interesting description of the effects of pneumothorax on the neighboring organs. The authors first call attention to the dilatation of the intercostal spaces and the displacing of the mediastinum and the diaphragm. Concerning the compressed area obtained by inflation, they very justly say that the absolute extent of the collapse can only be determined by radiographic examination. Next comes a description of the well known immediate results which may follow the production of an artificial pneumothorax, such as increased cough and dyspnea, all of which, as a rule, subsides after a little while. Under accidents and complications, not including pleural shock, the authors mention a persistent dyspnea and a cyanosis of face and extremities. As rarer accidents, digestive disturbances are mentioned, such as diarrhea and enteritis, and under nervous phenomena a postoperative psychosis is spoken of which would seem a rather rare accident.

In the chapters on indications and contraindications are enumerated the well known conditions under which we are using artificial pneumothorax in this country. Because of the tendency of some enthusiasts to apply artificial pneumothorax as a routine treatment in early cases, it is refreshing to see it stated here that in a mild early form, even going very slowly toward recovery, and in all cases tending to fibrosis, artificial pneumothorax should not be resorted to. On the other hand, the authors recommend artificial pneumothorax in uncontrollable hemorrhages, in cases tending to repeated hemorrhages, and in all rapidly ulcerative septic cases where one side is in fairly good condition. Indications for artificial pneumothorax in nontuberculous conditions are given in abscesses of the lungs, hydatid cysts, pulmonary gangrene, bronchiectasis, bullets and other foreign bodies in the parenchyma of the lung, penetrating thoracic wounds, traumatic hemothorax, in aspergillus and mycosis of the lung, and lastly, in pneumonia. Under contraindications the authors emphasize serious bilateral invasion and the concomitant tuberculous conditions such as advanced laryngeal tuberculosis, diabetes, and sclerotic myocarditis.

This second edition of the book represents the actual status of artificial pneumothorax in France. There are numerous illustrations of the inflation apparatus and accessory instruments, and a number of radiographs showing complete or partial collapses in a number of unusually interesting cases, all of which makes the book very valuable.

MEDICAL YEAR BOOK

The Medical Year Book for 1924. Edited by Charles R. Hewitt. London: William Heinemann, Ltd., 1924.

This is a new departure so far as medical books are concerned. It is a yearly *vade mecum* for the medical profession. It is written and compiled by one who is admirably adapted in every respect for the undertaking. Mr. Hewitt, the author, was for many years librarian of the Royal Society of Medicine, and in this capacity came into contact with members of the medical profession from all parts of the country and necessarily became acquainted with their needs. A book of this description has been wanted for long, its object being, as given in the preface, to provide a handy volume conveniently arranged and classified and intended to serve as a guide to the current activities of the profession in Great Britain. It gives reliable information concerning everything worth knowing of the British medical profession and as such should be immensely useful to the American medical man about to visit Great Britain, and it may be said that its possession would save its owner a vast amount of trouble and inconvenience. As a matter of fact the book would seem to be even more fitted for use by the American and Canadian visitor than by the resident medical practitioner.

It is extremely well arranged and well got up and Mr. Hewitt is to be congratulated upon having achieved the object which he set himself in a most successful manner. In addition to detailed information regarding the medical profession and all pertaining to it, original articles on medical subjects of particular interest have been contributed. Insulin and diabetes is dealt with by Dr. O. F. F. Leyton; Cancer, by Dr. C. Powell White; Principles of Chemotherapy, by Mr. J. G. R. McDonagh, and the Fellowship of Medicine, by Mr. Percy Dunn. The book is especially commended to the notice of American medical men who wish to obtain accurate information of British medical matters.

THE SCALP

Entretiens Dermatologiques. Deuxieme Volume. Maladies Du Cuir Chevelu. Par Dr. R. Sabouraud. Paris: Masson et Cie, 1924.

This is a new book of 272 pages, devoted entirely to diseases of the scalp associated with loss of hair. Sabouraud's reputation in this field is so well known and his knowledge of this branch of dermatology is so comprehensive, that it would seem almost superfluous to do more than mention the titles of the different chapters which he takes up. Every phase of the subject is given in detail, and the book is written in plain and interesting style. Much of it, instead of being couched in stilted, technical fashion, is written more or less in conversational style, and the reader feels that he is participating in a lecture instead of reading a highly technical exposition of the subject.

The book deals chiefly with premature loss of hair, alopecia areata, alopecia associated with congenital syphilis, alopecia attended by thyroid disturbances, and so forth. The various malformations and diseases of the teeth as etiological factors, are considered at length. The last two chapters deal with etiology and treatment. The book is well illustrated with striking half tone photographs on glazed paper.

DIAGNOSIS

Diagnostic Methods. By Herbert Thomas Brooks, A.B., M.D., F.A.C.P. Fourth Edition, with Fifty-two Illustrations. St. Louis, Mo.: C. V. Mosby Company, 1923.

This interesting little volume has been carefully gone over since the last edition, with the result that it has been brought up to date in every particular. Certain tests have been omitted, and much new material has been added. The first chapter takes up history taking and continues through physical examination of the patient into the various laboratory tests that are employed in making a diagnosis. The author confines himself exclusively to the task of describing these various tests briefly yet fully, without expressing any opinion as to their merits. Obviously only those procedures are described, which have withstood the test of time and experience. The volume, therefore, is an extremely useful one, which should be at the elbow of every physician and laboratory worker.

CONSTIPATION

The Conquest of Constipation. By William S. Walsh, M.D., New York: E. P. Dutton & Co., 1923.

In view of the fact that fully twenty per cent. of the population of the entire country suffer from this condition, and that approximately fifty million dollars are spent every year in this country alone for proprietary remedies for constipation, it is surprising indeed to learn from this interesting volume that the disorder can be cured, in nine cases out of ten, without resort to drugs or surgery. The author does not accept the general view that constipation necessarily is harmful. He believes that in most cases the effects are not as serious as is often alleged, and that the symptoms of constipation are not always the results of poisoning.

He deprecates the use of drugs, not only because they are habit forming, but because they are unnecessary. Constipation can be prevented, and even cured, according to the author, by the elimination of worry, due attention to personal hygiene, proper training of the intestine, increased water drinking, active and passive exercise, moderation in eating, adjusted diet, and by a correct posture of the body. All of which reminds one of the classical prescription for making a Welsh rabbit.

A careful study of this work undoubtedly would bring about a much better operation of the bowel movements and with it an improved state of health. Unfortunately, however, living is so complicated and fraught with so many anxieties and duties, that it is probable that constipation will long be with us as the most common of all functional disturbances, and that abused Nature will still require such acceleration as drugs, enemas, and other remedies can provide.

STEINACH

Rejuvenation and the Prolongation of Human Efficiency. Experiences with the Steinach Operation on Man and Animals. By Dr. Paul Kammerer. With an introduction by Dr. Harry Benjamin. Illustrated. New York: Boni & Liveright, 1923.

On the theory that revolutionary discoveries, especially when they concern the course of human life as does Steinach's discovery, cannot be retained as the carefully guarded secret of a limited caste of scientists, and in order that the true facts of this far-reaching discovery may reach the public ungarbled, this distinguished biologist has undertaken to explain in a popular style the present state of rejuvenation possibilities as they are based on Steinach's discovery. Kammerer asks why the human mind, which has learned to master the lightning and the floods, and has made steam and electricity do its bidding, should not eventually succeed in attaining supremacy over its own life? Surely an ambitious program, yet one which does not seem so far from realization to the author.

The work consists of thirty-six chapters, including a clinical supplement, references and an index. The author takes his reader with him along the entire route, beginning with the abstract subject of ageing in general, through the innumerable attempts of the past to retain or restore youth, and finally down to the present rejuvenation work in which he has collaborated to a modest degree with Steinach. The various arguments that have been raised against this method are taken up *seriatim* and discussed freely and broadly, and it must be admitted he has made out a strong case, not only for the basis underlying rejuvenation or prolongation of human efficiency, but also for this particular method of accomplishing this highly desired state.

It is to be regretted that Kammerer did not devote himself to a purely scientific presentation of the subject, leaving to some other writer the task of popularizing it. Coming from so eminent a source, a purely technical presentation of Steinach's work would have established it on a plane commensurate with its importance and with its dignity as a surgicobiological procedure of great value. The volume before us does not carry that sense of conviction which a new and comparatively untried scientific procedure requires to "put it across." Undoubtedly the Steinach operation is of great value in appropriate

cases, as Kammerer so well points out, and it is quite probable that it will become vastly more popular with the passage of time. A number of case reports are quoted in the clinical supplement both of foreign and American origin (Benjamin, Wolbarst, Chetwood), all tending to confirm the author's confidence in the value of the procedure and his optimistic views for its future effect on the race. Several illustrations help to visualize the startling effects of the operation in animals and in man, and it must be admitted that these effects undoubtedly were worth striving for.

As a contribution to the popular literature of the subject of rejuvenation, we cannot but feel that this volume will add dignity and sound learning to a mass of stuff that has been fed to a hungry public by the daily press of a certain tint. It will undoubtedly help to establish Steinach's work on the high plane to which it belongs, stripped of all the claptrap that has been showered upon it and similar procedures by designing charlatans. The book can therefore be commended as a clear, unvarnished statement of the biological processes underlying Steinach's work and the experimental studies that have been made along these lines.

MONOGAMY

A Plea for Monogamy. By Wilfred Lay, Ph.D. New York: Boni & Liveright, 1923.

A onesided newspaperish handling of a most important subject. There are many things contained in this book which experience has shown to be true but most of its value is lost in the overemphasis which is placed upon it. The writer may be likened to a small child who on seeing a train go by will insist that the train is enabled to go because the wheels revolve. There are many other things which make a train go, Mr. Lay, and one should first study the locomotive as well as the cars before attempting to call oneself an authority on such a complex subject. One must study the inside and then the outside and then perhaps venture an hypothesis.

FETISHISM

Der Fetishmus. By William Stekel, M. D. Boston: Richard G. Badger, 1923.

Stekel presents this seventh volume of his series with case histories, his own and others taken from the literature, and with a generous amount of discussion upon the subject. The latter is by no means always convincing in regard to the several things which the author sets out to prove. Clearly as he has set forth the phenomenon of fetishism in the psychoneurotic life, in the "parapathies," he does not convince us that it is so worthy of separate classification as he would make it. He has tried to set it apart from some of the interpretation heretofore given it. This revealed it as a manifestation of the partial libido attachment but left it more plainly as merely part of the general disturbance of the psychosexual development and adjustment. Yet Stekel has aided in the understanding of the phenomenon by his study upon it. He has pointed out its active association with onanistic practice, its close relation to compulsion, in fact its own compulsive nature as well as its frequent manifestation in the compulsive acts of kleptomania or public exhibitionism. He has shown in its origin and its compromise service to the individual its connection with religion. Stekel has given rein here to his own proneness to imaginative explanation which pushes the religious interpretation rather beyond strict scientific bounds. The book however adds much valuable material and at least challenges interpretative interest. As always it acknowledges a worthy practical purpose to reveal more clearly prevailing facts of the psychosexual life which are too little known and still less understood but which are of utmost importance. Stekel addresses himself to those groups in society which have a particular responsibility toward understanding individual difficulties in order to deal with them constructively.

POPULATION PROBLEMS

Mankind at the Crossroads. By Edward M. East. New York: Charles Scribner's Sons, 1923.

Edward M. East, now professor of genetics at Harvard University, began his career as a chemist in the fields of food and agriculture. He later devoted himself to the study of practical plant breeding, and is now an eminent authority on the subject of genetics. Hence, he is well qualified to write on the world's population problems, since he bases his statements and opinions upon a vast amount of careful study and original research.

The background of his book is, of course, biological, as is shown in the first chapter devoted to a discussion of heredity and variation. This is followed by a chapter on the history of the population problem, then he takes up his chief theme—population and the food supply, an aspect which he treats in a manner so brilliant and adequate that it forms his chief contribution. His method of tracing and pointing out the close and vital relation of this question to political, governmental and social problems is masterly. He next discusses our agricultural prospects of the future and whether we can develop a permanent agriculture in this country.

His next chapters, entitled the Rôle of Death in the Drama of Life, the Relation Between Birth Restriction and Public Health, the Declining Birth Rate, the Birth Rate and Social Progress and the Welfare of the Family, are all of special interest to the physician. Professor East's argument that preventive medicine has done little to change the incidence of natural selection in man, and the fact that he contributes practically nothing to the important problem of what causes of death in the present day are racially selective, and how greatly so, will raise storms of controversy. He states that the decided increase in length of life within the last hundred years is not due to any lengthening of the normal life span, but that it is a purely statistical result of keeping the weak and unfit alive longer than they have been able heretofore to survive under less artificial conditions. This means, however, that more persons are able to breed than formerly. This process of helping the weak may result—a rather strange conclusion for an authority on genetics!—in "promoting strength instead of weakness."

The reader feels, upon laying down the volume, that Professor East would have made his points more forceful and significant had he not ridden his

hobby, proper birth control, so fast and furiously throughout the book; however, *Mankind at the Crossroads* is a brilliant work, its faults being more of style and manner than of content, and it is worthy the careful attention of all thinking men and women.

Medicoliterary Notes.

A survey of maternity service recently completed by the New York Nursery and Child's Hospital shows that fifty-seven out of every hundred mothers now give birth to their babies in hospitals.

* * *

Saint Joan, a chronicle play, by Bernard Shaw, the current Theatre Guild production in New York, is probably the outstanding theatrical event of the season in that it combines so many of the requisites of great drama—excellent characterization based on true psychology, lines both interesting and entertaining, delicious bits of Shavian humor, and excellent acting and setting.

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The January number of *Mental Hygiene* has a supplement devoted to book reviews. Among these are: A Study of American Intelligence, by Carl C. Brigham, Ph.D.; Problems in Dynamic Psychology, by Dr. John T. McCurdy; Papers on Psychoanalysis, by Dr. Ernest Jones, and Nursing and Nursing Education in the United States, by the Rockefeller Foundation Committee for the Study of Nursing Education.

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The nearest approach to the absolute zero temperature yet attained was achieved recently by Prof. Kamerlingh Onnes, of the University of Leyden, Holland, in an unsuccessful attempt to solidify liquid helium. Expressed in the terms of physics, the degree reached was 0.82 absolute, which means 272.18 below zero Centigrade, or 458 below Fahrenheit.

* * *

Because of the high cost of wood in Germany, experiments have been made in using other materials for coffins. Probably the most successful of these materials is plaster of Paris, which is light, durable, and more easily handled than caskets of solid wood. Gypsum is often used and is only half as expensive as wood.

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The U. S. Public Health Service is making a study of common colds and influenza and the minor respiratory diseases with a view to gathering data sufficiently inclusive to be of value in prevention of such infections.

* * *

Shoes dyed with solutions containing aniline or nitrobenzene will poison the wearer unless they are allowed to dry for at least twenty-four hours before they are worn, is stated in an article in the *Chemical Bulletin* for November written by Prof. A. S. Lovenhart, of the University of Wisconsin, and C. W. Muehlberger. The person affected becomes blue within a few hours, particularly as to lips and nails, and this is accompanied by nausea, headache and dizziness, and often physical weakness. After the shoes are removed, the effects of the poison gradually disappear, the skin resuming its normal hue after several days.

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Bellevue and allied hospitals have recently issued their twentieth annual report covering the year 1921. The pamphlet of more than one hundred pages is devoted chiefly to statistical data.

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The Evolution of the Present Boston Health Department is described by Stephen L. Maloney, its secretary, in an article in the November issue of the *Monthly Bulletin* of the department.

* * *

In a recent address before the American Psychological Association, Prof. George M. Stratton, of the University of California, stated that exciting a bull by waving a red flag has nothing to do with the red. White angers him more, and green nearly as much as red. The real causes of the agitation are the strangeness of the object, its brightness, and its motion.

* * *

The Blind Bow-Boy, by Carl Van Vechten, certainly wins the prize for much ado about futility. Perhaps that is the moral that adorns the tale—we have a sneaking suspicion that it is, in spite of the statement on the jacket, to the effect that the author has taken an oath that he wrote the book for giving amusement and entertainment only. To show up the inanity and futility of the present day socalled Greenwich Village studio life—although most of the incidents of the story take place within the sacred precincts of Gramercy Park—would be the only excuse and possible justification of publishing such trash, for there is not enough amusement and entertainment in the book—and what there is is not very wholesome—to compensate the normal reader for wading through its trivialities.

* * *

Willa Cather's latest novel, *The Lost Lady,* is an admirable presentation of the type of weak but strongly sexed woman who has married out of gratitude a husband whom she thoroughly admires and upon whom she depends for moral support in all ways except her love life, as is shown by her almost complete demoralization after his death. The picture is remarkably just and true to life, for the author bestows upon her lost lady all the charm, generosity and warmth often found in such women, so that we realize her attractiveness and the reason why she is always able to arouse the interest and sympathy of those with whom she comes in contact, and at the same time shows up the weak and repellant side of her nature which leads her into illicit love affairs, and finally into slatternliness and drunkenness. A vague final glimpse of her, many years later, as the wife of a South American money magnate, does little to relieve the impression that she is still "a lost lady."

Practical Therapeutics

PRESENT STATUS OF RADIOTHERAPY

*With Particular Reference to Intensive X Ray Treatment**

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Intensive x ray therapy is not a new discovery, but is merely the result of improved technic, due chiefly to the following developments:

IMPROVED APPARATUS

The apparatus essential to the carrying out of this technic must be able to develop at least two hundred thousand volts.

THE USE OF HEAVY FILTERS

Our ultimate aim in therapy has always been to use rays as nearly homogeneous as possible. The rays emanating from an x ray tube are a mixture of various wave lengths. The longest wave lengths, having the least penetrating value, are most easily absorbed by the skin and have very little therapeutic value for deep seated lesions.

This value increases in fairly direct ratio as the wave length of the rays decreases. So in deep therapy it becomes important to filter out as many of the longer wave lengths as possible, keeping in mind that the more we filter out the fewer rays are passing through, and the longer the required exposure to get the proper dose. It has been found that the various metals are pervious to x rays in ratio to their atomic weight. Aluminum, which has been mainly used as a filter, has a low atomic weight and permits a larger percentage of longer wave lengths to pass through than any other metal. So to allow only rays of smaller wave lengths to pass through we must use metals of higher atomic weight, such as copper or zinc. It has been found that for this purpose 0.5 mm. copper or zinc equals about ten or eleven mm. of aluminum. The heavier the filter we use, other things being equal, the larger the percentage of depth dose, so the thickness of the filter to be used will depend to a considerable extent upon the situation of the diseased area to be treated.

The factors which determine the percentage of depth dose are: 1, voltage; the higher the voltage the larger the percentage. 2. Thickness of filter. 3. Distance. The farther the focal distance the larger the percentage of depth dose. For instance, at a focal distance of thirty cm. under certain conditions, the absorption at a depth of ten cm. would be about forty-two per cent.; under the same conditions at a focal distance of fifty cm. it would be about fifty per cent. 4. Size of the port of entry. The larger the port of entry, the greater the percentage of depth dose. This is due to the larger percentage of scattered rays which play a very important rôle in therapy.

LETHAL DOSE

We have reached a much better understanding as to what constitutes the lethal dose, that is, a dose which will destroy or make a certain type of tissue innocuous. We have found this to be for the ordinary types of sarcoma about eighty per cent., measured in the depth. This does not hold good for all varieties. Lymphosarcoma requires less than this, and chondrosarcoma and osteosarcoma much more than this. The lethal dose of carcinoma is from 110 to 120 per cent. The ovarian dose, that is, the dose which will destroy the Graafian follicles and produce an amenorrhea, is about forty per cent.

DEPTH DOSE

Professor Dessauer, of the University of Frankfort, through a number of years of experimentation, succeeded in determining the dose absorbed at various depths under different set conditions. This enables us to determine whether in a given case it is possible to administer the lethal dose to a certain diseased area. It does not necessarily follow that if we can do so we are going to effect a cure, but it does mean that, if we find that the disease is so situated that it is impossible for us to administer a lethal dose, our efforts will be useless. Through the aid of a set of carefully prepared charts, by taking approximate measurements of the depth the lesion is situated, we are enabled to select the number of ports of entry necessary to attack the lesion, and to calculate mathematically the amount to be administered through each field to make up the required dose. In doing this, we must be careful to direct our rays so as not to overexpose healthy tissues, always keeping in mind the hypersensitiveness of various organs, such as the spleen and other glands.

There are three kinds of rays that are chiefly to be considered in therapy. 1. Direct rays. 2. Characteristic rays. These are the rays that are produced in the tissues by the direct rays, and each substance has its own characteristic ray which never changes for that particular substance. 3. Scattered rays. These are the rays that are dispersed from adjoining cells and are scattered back and forth in all directions. As to which of the three plays the most important rôle in therapy, it is difficult to say. We do know that the scattered rays are of much more importance than we ever suspected, and it would not be at all surprising if the future showed that they were really the most important of them all.

ESTIMATING SIZE OF DOSE

As regards measuring the quality and quantity of rays produced by these high voltages, we find that most of the methods used for lower voltages are of no help to us whatever. In fact, the only measure that is of any use is the iontoquantimeter, and the one perfected by Professor Friedrich, of Freiburg, is probably the most serviceable. This instrument in his opinion enables him to measure the exact dose administered, irrespective of filter, penetration, distance or any other detail. One hundred and seventy electrostatic skin units make an erythema dose. This can be kept track of without stopping the apparatus even for an instant, and when this number is reached the operator feels certain that the patient has received the exact dose intended to be given.

*Read at the annual meeting of the American Medical Association, held in St. Louis, Mo., May 25, 1922.

APPARATUS

The apparatus, superficially described, consists of a small (one c. c. capacity) ionization chamber made of aluminum, which is connected with a rubber tubing to a large ionization chamber fitted with a gold leaf electroscope. This is charged and as the rays strike the small ionization chamber the electroscope is gradually discharged and the time carefully noted. Each apparatus is tested to determine how many electrostatic units each discharge represents. These are carefully added up and when the required total is reached, treatment is stopped. There are some inaccuracies due to the selfdischarge of the electroscopes, which must be taken care of. This is done by charging the electroscope to six and then waiting to see how much it will discharge of its own accord during the time that it took for one complete discharge with the ray in operation. We now determine how long it takes to discharge this number of units with the ray, and then multiply this time by the number of times the electroscope has been discharged during the treatment. This amount of ray is added to complete the dose. All this sounds rather complicated, but is really very simple. The small ionization chamber can be left on the skin during the treatment to measure skin dosage, or it can be inserted into the rectum or vagina to measure depth dosage. The carcinoma dose, as measured in the vagina, is 152 electrostatic units. The myoma dose is 100 to 120 skin units to each field or 80 units measured in the vagina. In making measurements in the vagina a permanent horse hoof catheter is kept in the bladder to keep this organ empty.

TECHNIC

As to the technic of application, this depends a great deal upon the nature and the situation of the lesion, and what we are trying to accomplish. In cases of malignancy, where it is essential to administer a large depth dose, we find it necessary to use heavier filters, larger fields, greater distance, and higher voltages. Under these conditions we administer the ray up to the point of toleration, that is, we expect a fairly marked erythema to follow each treatment. The formula that I am using in these cases is 200 K. V. at a distance of 50 cm. large fields 3 ma. current with 1 mm. copper+2 mm. aluminum filter for 4 hours. This is practically always followed by a fairly marked dermatitis which disappears in about a week. In cases where we have to use small fields and for various reasons we must cut down our time of exposure, I use the following formula: 200 K. V. at a distance of 23 cm. with compression, size of fields 6×8 cm., this at a depth of 10 cm. spreads to 11. 5×8. 5 cm. 3 ma. ½ mm. copper+2 mm. aluminum filter for 23 minutes. This is followed by an erythema lasting for about a week and then succeeded by a more or less marked tanning of the skin.

The two formulas I mentioned are practically the extremes. I rarely go above a distance of 50 cm. as this would make the time of exposure impractical and 23 cm. is about as near a focal distance as we can get to the skin. We use various modifications between these extremes, each case determining its own technic. There is a great difference of opinion as to when these treatments may be repeated. Some hold that a full intensive erythema dose should not be repeated within six months. Others advise repeating it every month for four or five successive months. I usually wait about six or eight weeks before repeating a near field treatment, and a much longer time before repeating a far field treatment. In treating benign conditions, we do not go to the point of producing an erythema. We rarely give the full dose at one time, but prefer to divide it over a longer period. In fact, in many of the conditions, such as the leucemias, the administration of a massive dose would be accompanied by a great deal of danger.

Practically each individual ailment has to be treated in a different way, depending upon what we are trying to accomplish. The constitutional disturbances, following some of the more intensive treatments for malignancy, are sometimes very severe. There is a marked individual susceptibility about this, which is rather difficult to understand. I have seen patients who had eight hours of intensive ray within two days, who were very slightly affected, while others, who had one quarter of this dose became very ill. The general condition of the patient does not seem to have any influence upon this. Some of the patients, who had very slight disturbances, had been much weakened by recent major operations. The immediate symptoms usually consist of general malaise, nausea, vomiting, occasionally diarrhea, general restlessness and nervousness. To avoid these symptoms, it is advisable to treat all patients on an empty stomach. At Prof. Lexar's clinic in Freiburg, I saw them give the patients two uzara tablets about one half hour before treatment, and two tablets immediately after the treatment was completed. They affirmed that by doing this they had been able to avoid most of the unpleasant symptoms. I have been doing this for some months and believe that the constitutional disturbances following the treatments have been decidedly less severe. Occasionally, when the patient is much weakened, about three or four weeks after the treatment it is advisable to give an intravenous injection of one c. c. of serum in twenty c. c. of normal saline solution.

VALUE OF X RAY IN MALIGNANCY

While intensive x ray therapy may be used in a number of benign conditions, its chief use is in the treatment of the various types of malignant growths. Among these probably the class that offers the most satisfactory immediate results are the various forms of sarcomata. On my trip abroad last summer, in visiting the various clinics I found almost a universal consensus of opinion that no sarcoma of any type should ever be surgically interfered with. They state that practically every case of sarcoma in which an operation was performed was sooner or later followed by recurrence or metastasis. They think that radiotherapy offers a decidedly better chance to these patients, especially as the lethal dose of sarcoma is only about eighty per cent. which amount can be usually administered without much difficulty. The results in some of these cases are really very gratifying. I treated a number of retroorbital sarcomas with a disappearance of the growth, in several cases now over a period of a number of years. Even before the advent of intensive radiotherapy with the

old technic every now and then we succeeded in getting a most astonishing result.

The scope of my paper does not permit me to describe individual cases, but I should like to report one case that I consider very interesting.

Case.—L. R., a young girl of eleven, was brought to me in the fall of 1916 with the following history: About four months before she came to me she had been operated upon by Dr. B. for a sarcoma of the left ovary. This diagnosis was confirmed by microscopical examination. Shortly after the operation, in fact while she was still in the hospital, there was a recurrence in the left pelvis. This began to increase rapidly, until three months later there was a large palpable mass filling the entire left side of the abdomen from the pelvis to the kidney region. The patient at this time had a great deal of pain, could retain very little food, was very much emaciated, and almost entirely bedridden. Upon the mother's anxious solicitation that something more should be tried, the patient was taken to the Post-Graduate Hospital where Dr. P. performed a laparotomy in the hope that the mass might prove to be removable. He found that this was impossible, so he merely removed a small section for examination, which was again found to be sarcomatous tissue. Some weeks later, in the hope that I might be able to alleviate the pain, which at this time was extremely severe, the patient was brought to me for x ray treatment. The response to this treatment was very prompt. About four months after treatments were begun the mass disappeared entirely, the child began to gain in weight, and there was a complete disappearance of all the symptoms. She had periodical prophylactic treatments for a while, and at the time of writing this paper, five and a half years later, she is apparently in perfect health, normally developed, even to the extent of menstruating regularly, despite the large amount of x ray treatments she had received.

LYMPHOSARCOMA

Some of the most gratifying results we get are in cases of lymphosarcoma. All pathological tissues present various degrees of ray sensibility, but none is more sensitive and more responsive to the action of the ray than lymphosarcoma. After a treatment you can almost see the masses melt away from day to day. I have found that in a glandular mass, where it is not feasible to remove a gland for examination to determine its character, we can very often make a diagnosis by submitting the mass to x ray therapy and watch its behavior. If the diminution is very rapid, it is most likely a lymphosarcoma; if the diminution is somewhat less rapid, it is probably Hodgkin's disease, or lymphatic leucemia; if it yields but much more slowly, tuberculous adenitis; if it does not yield at all, the presumption is that the mass is luetic. During twenty years of radiotherapy work, I have been able to confirm this observation on many and various occasions.

CARCINOMA OF THE BREAST

Carcinoma of the breast and of the uterus make up the two largest fields in which intensive x ray therapy has proved of greatest value. In fact several clinics I visited in Germany last year, viz., Opitz in Freiburg, Seitz in Frankfort, Wintz in Erlangen and a number of others, have practically stopped operating in any of these cases. They assert that taking the cases at random, operable and inoperable, their results have been decidedly better with radiotherapy alone than with operation. I personally make it a rule to accept no operable case for radiotherapy treatment unless for some reason or other operation is contraindicated. I still think that the best method of combating malignancy, if the case is operable, is to give a preoperative x ray treatment, followed in about three weeks with complete surgical removal, and this in turn followed, as soon after operation as is feasible, with a course of prophylactic x ray treatments. I have treated a number of primary cases, in which an operation was refused absolutely, or where, on account of old age, or poor general condition or extensive involvement, an operation was thought to be inadvisable. Many of these patients have done very well indeed, especially the older patients, in whom the carcinoma was of the slowly developing scirrhous type. In a number of these the tumor disappeared, and they are still apparently free from recurrence, some many years after the treatment has been administered, although at that time we were working with decidedly less intensive ray than we have at our command today.

In carcinoma of the breast I use one large far field at a distance of fifty cm. for four hours, covering the breast and the entire front of the chest, and two small near fields, one for the axilla and one for the supraclavicular space. Occasionally I also take a large far field from the back, taking in the entire affected side.

CARCINOMA OF THE UTERUS

There is a marked difference of opinion as to the proper technic to be used in the treatment of carcinoma of the uterus. One school, the chief exponents of which are probably Friedrich of Freiburg and Warnekros of Berlin, advise the use of large far fields, even up to a distance of seventy cm., one field from the front and another through the gluteal region, with two small fields from the sides, if necessary, to administer the full dose. A full erythema dose is given and the treatment not repeated in less than six months. The other school, probably headed by Seitz of Frankfort and Wintz of Erlangen, advise the use of four small fields from the front and three fields from the back. This is repeated in six weeks and again in eight weeks. I have tried both methods, but my treatments were given too recently to be able to draw conclusions.

CANCER OF THE CERVIX

In cancer of the cervix, in addition to x ray therapy, radium may also be applied locally.

CANCER OF THE BLADDER

Cancer of the bladder may also be treated much like that of the uterus. In a case I treated, in which the patient was cystoscoped and a small section removed, which was reported to be a carcinoma, the results were so startling that the surgeon felt that a mistake had been made in the diagnosis.

CANCER OF THE RECTUM

These are divided into three classes. 1. Those that are situated eight to ten cm. distance up the rectum. They are the most favorable and are treated the same as cancer of the uterus. 2. Those that are situated three to eight cm. up the rectum. The results are not so good, as it is difficult to get the required percentage of depth dose to the lesion. 3. Those situated at the anus. Prognosis in these cases is very bad.

In carcinomas, involving other parts of the body, we may get a marked improvement of the symptoms, but rarely anything more than that. Although I have seen patients who had metastatic involvement of the spine, and who were bedridden, suffering excruciating pain, get on their feet and be entirely free of pain, after an intensive treatment. This improvement is still persisting, at the writing of this paper, some months after the treatments.

PREOPERATIVE X RAY TREATMENT

This consists in giving the patients one intensive dose about three weeks before operation. The object of it is to make the carcinomatous cells as inactive as possible, to avoid the dissemination of active cells during the operation. This has been carried out too short a time to make definite conclusions possible, but the evidence so far seems to show that it has decided value.

PROPHYLACTIC X RAY TREATMENTS

These treatments have been carried out for a considerable time now, and the preponderance of evidence seems to show that they are of decided value in reducing the percentage of recurrences. To be effective they must be carried out efficiently and persistently. They are begun as shortly after operation as possible, and are repeated at intervals of two or three months for a period of two or three years after operation.

BENIGN CONDITIONS

As to the treatment of benign conditions with intensive x ray therapy, I cannot possibly begin to go into the question. The scope of this paper will not permit it. It is of great value in the treatment of uterine fibroids, menorrhagias and metrorrhagias. It has enabled us to administer a full ovarian dose and produce a permanent amenorrhea in one treatment. In Professor Lexar's clinic for the past two years they have been treating fresh fractures with so-called irritating doses with most satisfactory results. They have succeeded in reducing the healing time about one half. Usually only one treatment is given, as soon as possible after the fracture has been set. The dose given is about one tenth of an erythema dose. I used this technic in a case of ununited fracture of the ulna with satisfactory results. A similar technic is used in the treatment of tuberculous bones and joints, using even smaller irritating doses, one twentieth to one third of an erythema dose.

There is no doubt that intensive x ray therapy is a decided advance over the old technic, and that through its aid we are able to do a great deal more for our patients than we have been able to do in the past.

40 East Fifty-first Street.

Treatment of Lobar Pneumonia Due to Pneumococcus Infection.—Lewellys F. Barker (*Virginia Medical Monthly,* September, 1923) believes that specific treatment by serum or by optochin or quinine, while unquestionably of some value, is not yet entirely satisfactory. He lays stress on the general, dietetic, hydrotherapeutic and symptomatic treatment. Cough, when dry and unproductive, can be controlled during the day with one quarter grain of codeine and one twelfth grain of heroine in tablet form by mouth, repeated every two to four hours. At night it is well to administer a small dose of morphine hypodermically at nine o'clock; it does not seem right to allow patients to be harassed by a racking cough in acute pneumonia, when it can be safely controlled by these means. When pleuritic pain is severe, if it is not relieved by a flat ice bag or salt solution compresses, a small hypodermic of morphine may be needed. Dyspnea in the early stages may be relieved by venesection of three hundred to five hundred c.c.; in the later stages oxygen may be of real assistance when properly administered, as by the Haldane method, or Meltzer's hollow tongue depressor. Insomnia, in the absence of cough and pain, may be overcome by adalin, luminal, barbital, or a drachm of the mistura chloralis et potassii bromidi composita (N. F.). Abdominal distention may be relieved by turpentine stupes, passage of the rectal tube, or the hypodermic injection of one c.c. of pituitrin.

Suction in the Treatment of Septic Ears.—W. Stuart-Low (*British Medical Journal,* July 14, 1923) states that the simplest method of applying suction to the aural cavity is to attach to the nozzle of a medium sized glass syringe or a larger metal syringe a short length of rubber tubing, which must be inserted into the ear, the piston being drawn out to allow all purulent material to be sucked away. Until the ear is dry this treatment must be repeated with the aid of good reflected light. The use of a motor suction pump, with special fine pointed glass tubes bent in several directions, is still better. These tubes may be inserted, under a good light, into the many recesses of the tympanic cavity, up into the attic, down into the depressed floor of the tympanic recess, and back into the aditus. For acute otitis media following paracentesis tympani, all the pus from the middle ear may be sucked out by inserting a finely pointed tube into the incision of the membrana tympani. This treatment, added to the application of bell shaped dry cups over the mastoid, is continued at intervals of forty-eight hours, a mastoid operation being thereby avoided, provided the treatment is used without delay during the inflammatory and congestive stages. For chronic aural suppuration, suction is employed in the ear, over the vein passing out directly from the lateral sinus; it should be repeated once or twice or even thrice a day for at least one month. This method, when carefully carried out, has, with few exceptions, the effect of avoiding operative treatment. It is the means of clearing the ear of discharge so effectively, that it prepares and secures a clear field for operation, should this be necessary, and prevents the development of the most dangerous complication—septic meningitis.

Abstracts from Current Literature

RESPIRATORY DISEASES

Tuberculosis as an Organic Disease.—E. Löwenstein (*Wiener klinische Wochenschrift,* August 2, 1923) draws the following conclusions: 1. Tubercle bacilli may circulate in the blood even in clinically healthy individuals. 2. The changes in the lungs may be so slight in tuberculosis of the bones and the kidneys as to reveal no pathological signs, but at any rate the pulmonary changes in such metastatic tuberculosis are slight as a rule and not active. 3. The bacillemia always appears a short time after the infection. 4. The fate of the tuberculous infection depends upon whether the first localization of the tuberculosis appears in a sensitive or in an immune organ. In the former case, not only the affected organ is involved, but with a sufficiently long duration of the disease, the metastases in the entire system increase, as like tissues become involved by tuberculosis (sympathetic involvement). Tuberculosis is therefore confined to a single organic system in about ninety per cent. of the cases (for example in the lung, kidney, bones, eye, and skin). 5. If the first focus appears in organs not predisposed to tuberculosis, no disease results and there may even be an increased general resistance; these principles may possibly also apply to other bacteria and antigens.

Digestive Function in Pulmonary Tuberculosis.—J. Gordon Hislop (*Lancet,* August 4, 1923) believes that tuberculosis has an inhibitory effect on the digestive function, the quality and the quantity of the gastric juice depending upon, 1, the degree of the inhibition, and 2, the quality and quantity of the gastric juice prior to the onset of tuberculosis. With hypochlorhydria, the indigestion is never severe and yields to treatment readily as a result of stimulation of the gastric secretion. Hunger pain appearing two or more hours after a meal is the predominant symptom and is temporarily relieved by the ingestion of food. The second type is the more common and the symptoms are flatulence, pain, nausea and vomiting. The intolerance of fats alone or in a mixed diet is the main feature. The treatment consists of keeping the mouth and teeth clean with an acid mouth wash used every night and morning. Diluted nitrohydrochloric acid, in doses of ten to thirty minim, is given before or during each meal. In the presence of signs of dyspepsia an excessive diet should be cut down. Milk should be given in moderation, and the addition of sodium citrate often overcomes the difficulty in the assimilation of moderate or reduced amounts. Mixtures of proteins with fats should be avoided. Meats are better cooked in their own juices. Milk should not be given at a meal in which meat is taken. Fish should not be fried in oil. The fat taken with meat should be crisp. Carbohydrates should be given at meat meals.

Internal Complications Following Tonsillectomy and Apical Resection of the Teeth.—W. Falta and F. Depisch (*Wiener klinische Wochenschrift,* August 16, 1923) observed that in a number of cases of nephritis, endocarditis, arthritis, etc., acute exacerbations of these diseases followed operative interferences on the tonsils and the teeth. These exacerbations may be explained most readily by an introduction of infectious material in the vascular and lymph channels during the operation, even though it must be admitted that another mode of infection may be possible. These findings indicate that such complications should be sought for by careful investigations. If the author's theory is found to be correct the operative technic and subsequent treatment should be subjected to revision from this viewpoint.

Internal Complications Following Tonsillectomy.—Fritz Schlemmer (*Wiener klinische Wochenschrift,* August 16, 1923) endeavors to avoid internal complications following tonsillectomy by the elimination of squeezing manipulations when operating upon infected tonsils. These internal complications arise primarily in a lymphogenic manner and only secondarily by the roundabout way of the circulation via previously infected lymph channels. In all inflammatory processes the regional lymph channels and lymph nodes always become diseased first, which shows that the afferent lymph channels must carry off the infected material, which is previously stored immediately in the lymph nodes. The flow of lymph away from the tonsils travels by way of a dense greatly intercommunicating capillary network, and if a centripetal pressure is made from the pharynx upon the lymph channels which open only in a centripetal fashion, the natural result will be the passive expression of toxic material into this capillary network of the peritonsillar tissue. The squeezing of a tonsil full of bacteria is significant only if it is squeezed while it is still intact with its surroundings. The author never grasps the tonsillar substance but seizes the palatal arch with a single pronged volsellum above the tonsil and dissects the mucosa in the shape of a horseshoe with a scalpel in the usual manner without ever touching the tonsil itself. As soon as the tonsil is dissected out more than half from its muscular surroundings, it can be grasped and drawn forward in the usual manner.

Prophylactic Vaccination Against Acute Tonsillitis.—Arthur L. Bloomfield and Augustus R. Felty (*Bulletin of the Johns Hopkins Hospital,* August, 1923) used ninety student nurses for this experiment. Thirty-three of them were found to be carriers of betahemolytic streptococci, seventeen were vaccinated, and sixteen used as controls. There were fifty-seven noncarriers and eighteen of these received a polyvalent vaccine, prepared from twenty-one strains of betahemolytic streptococcus recently isolated from cases of acute follicular tonsillitis. Three subcutaneous doses of 75, 100 and 125 mm. were given at intervals of one week. No case of tonsillitis occurred in the group of carriers whether vaccinated or unvaccinated. In the group of noncarriers, three of the vaccinated group contracted tonsillitis, as against twelve of the unvaccinated. However, the three cases among the vaccinated were so mild as to be almost subclinical, while all but one in the unvaccinated were severe.

Late Results Following X Ray Treatment of Chronically Infected Tonsils and Adenoids.—Charles A. Waters (*Southern Medical Journal,* October, 1923) gives the technic of this form of treatment, follows the course of the cases, describes the results and the bacteriology, and presents the following conclusions: Röntgenotherapy causes a decrease in the size of chronically infected tonsils and adenoids, particularly in the large cellular gland, less so in those which are small and fibrous. It will not cause the hemolytic streptococcus to disappear permanently from the surface of the crypts of the tonsil, but will cause a small percentage of the palpable glands at the angle of the jaw to disappear. Clinically it gives relief from symptoms, but this may be only temporary. In some cases the objective signs do not disappear after this treatment; that is, the size of the tonsils is unchanged, hemolytic streptococcus is still present, and the glands of the neck are palpable, although subjectively they are well. Generalized use of x rays for treatment of chronically infected tonsils and adenoids is not advisable, but seems to be limited to those cases in which a surgical operation is contraindicated, as by chorea, pulmonary tuberculosis, and cardiac and renal lesions. Waters is of the opinion that after the technic has been perfected the greatest field of usefulness for this form of treatment will be found in children. Children rarely have a chronic infection of the tonsils comparable with that of adults. Their tonsils and adenoids are very cellular and of the type that responds most readily to röntgenotherapy, and their symptoms are largely due to hypertrophy of the lymphoid tissue in the throat and nasopharynx.

Etiology of Phthisis in Old Persons.—Hermann Schlesinger (*Wiener klinische Wochenschrift,* May 10, 1923) emphasizes the fact that pulmonary tuberculosis is not rare in senility. Its site of predilection is the pulmonary apices and the location is frequently determined by previous local injury of the tissue, as by compression of the bronchi, stricture, or carcinoma. Its course is usually chronic. The factors which favor its occufrence are the weakened respiratory and circulatory energy, the rigidity of the thorax, degeneration of the lymph nodes, the weakening of the protective and immunity apparatus of the organism, diabetes, carcinoma, unhygienic conditions, and psychic disorders. A certain immunity acquired in early life, emphysema of the lung and, probably, the polyglobulia peculiar to old age, afford some protection against the development and dissemination of tuberculosis.

Oral Râles.—Alfred Schick (*Wiener klinische Wochenschrift,* May 3, 1923) asserts that he has never observed râles in beginning tuberculosis by auscultation of the mouth; they are found in the presence of cavities and bronchitis. Inasmuch as the cavities may be deep in the tissues, oral auscultation is a useful means of examination for rapid orientation and in determining whether any accessory râles are present, their number and size, and whether the disease is extensive or restricted. In addition to all the other clinical and subjective symptoms the determination whether the tuberculous process is benign or malignant is considerably simplified.

The Streptococcus: The Greatest Menace to Mankind.—Sydney Pern (*Medical Journal of Australia,* November 4, 1922) asserts that we have to consider streptococcus infection in the same light as we do that of syphilis or tuberculosis. It is responsible for seventy per cent. of the sickness in temperate zones. It is capable of involving all tissues of the body which have blood or lymphatic channels entering them. We need to recast our ideas as to the origin of many diseases, such as pernicious anemia, diabetes, disseminated sclerosis, psoriasis, certain forms of epilepsy, and others, looking upon them as invasions of certain tissues by a low grade organism capable of cure by removal of the breeding grounds, provided enough tissue is left to function properly, and he maintains that the streptococcus is capable of filling this rôle.

Composition of the Gases in Artificial Pneumothorax.—Leonard Hill and J. Argyll Campbell (*British Medical Journal,* May 5, 1923) show: 1. That the carbon dioxide percentage in the gases of pneumothorax appears to approximate very rapidly to that of the blood bathing the compressed lung. The volume of gas introduced in carrying out artificial pneumothorax may thus be increased at first, but not more than about six per cent. 2. The oxygen percentage in the gases of the pneumothorax cavity approximates that in the tissues bounding the cavity. As nitrogen diffuses out equally, it makes little difference whether oxygen or air be used for inducing artificial pneumothorax. 3. Pathological fluids and tissues usually cause abnormally high percentages of carbon dioxide. Pathological changes probably lower the oxygen content. 4. Any leakage in the thoracic cavity lowers the carbon dioxide percentage, but increases the oxygen percentage in the imprisoned gas.

Value of Radium in the Treatment of Lupus.—H. Baumgartner (*Schweizerische medizinische Wochenschrift,* August 16, 1923) states that, aside from the more prompt effect, radium therapy is preferable to operative methods, for the additional reason that radium destroys only diseased tissue and leaves the healthy mucosa intact. Naturally, the radium must not be left *in situ* too long, depending upon the strength of the preparation used, so as to avoid cauterization of the surrounding tissues and even perforation outward or toward the oral cavity. It is also important to see that the preparation of radium should be applied as closely as possible to the diseased area and kept there by means of packing. Radium therapy also has the advantage, as compared with operative methods, of painlessness and of no interference with the patient's occupation. Mesothorium has also been used with success in lupus of the internal parts of the nose. The success of the treatment with radium or mesothorium depends less upon the extent of the lupus than upon the strength of the preparation used and the duration of their application.

Experiences in New York Hospital with the Treatment of Lobar Pneumonia by a Serum Free Solution of Pneumococcus Antibodies.—Lewis A. Connor (*American Journal of the Medical Sciences,* December, 1922) studied the effect of treatment by the intravenous injection of a serum free solution of antibodies of the three fixed types of pneumococci in a series of 116 unselected cases of lobar pneumonia in adults. The death rate for the 116 cases was 14.6 per cent. The exciting organism in thirteen cases was a streptococcus or the Friedländer bacillus; in this group the mortality was 46.1 per cent. Of the remaining cases, ninety were proved to be due to the pneumococcus, and thirteen were regarded as probably due to this organism. Among these 103 patients the death rate was 10.6 per cent. Type IV pneumonias were conspicuous by their high incidence and low mortality (4.1 per cent.). The treatment seemed to have some real curative value in Type I and Type II cases at least, but the nature of the therapeutic effects of the solution is obscure in view of its apparent effectiveness in Type IV cases. The method is free from the disadvantages incident to the injection of large amounts of serum, but it has one serious defect in that the immediate reactions following the injections are often severe and are occasionally dangerous.

PEDIATRICS

Clinical Study of Muscle Tone in Rickets.—J. D. Douglas Galbraith (*British Journal of Children's Diseases,* July-September, 1923) says that the radiographic and clinical pictures in rickets, while showing general agreement, often show marked discrepancies. The variation in calcium metabolism under different conditions so far as one can accept ossification as an index of calcium metabolism, suggests that the disturbance of calcium metabolism may be a concomitant of rickets rather than the primary stage. Emphasis is laid on the condition of the musculature in rickets, and from clinical observations support is given to the view that the disease may involve the muscles as well as the bones. Bad hygienic conditions, by depressing muscle activity, would be strong predisposing factors to the development of rickets.

Investigations on the Serum for Syphilis in Newborn Healthy Infants and Syphilitic Mothers.—P. Esch (*Zentralblatt für Gynäkologie,* May 5, 1923) states that if the serum of newborn infants from nonsyphilitic mothers be examined, sometimes, as is well known, positive Wassermann reactions are found, which occurrence is explained by the fact that during parturition even healthy mothers now and then give positive Wassermann reactions. To explain this complicated condition, the author studied thirty children from mothers with latent and recent syphilis, and he comes to the conclusion that children from healthy mothers are never syphilitic. Children of luetic mothers, if they have not been subjected to intrauterine infection in the typical recognized manner, may become infected by the blood from the umbilical vein which contains spirochetes, and therefore in established or probable syphilis of the mother, a rapid ligation of the umbilical cord is recommended.

Sour Skimmed Milk in the Digestive Disturbances of Infants.—According to E. Hainiss (*Monatsschrift für Kinderheilkunde,* September, 1923) the use of sour skimmed milk is indicated in the following conditions: 1. In infants, which in spite of breast feeding show no or only slight increase in weight and no signs of dyspepsia. 2. In breast fed infants, which, in spite of no signs of acute intestinal disturbance, are nevertheless losing in weight. 3. In disturbances of nutrition from milk, when the administration of malt soup produces no results and the case is probably one of combined disturbances of nutrition from milk and flour. 4. In disturbances of nutrition from flour. 5. In the presence of exudative symptoms. 6. As one element in mixed feeding, but chiefly in marantic infants, in whom the following feeding of farina gruel cooked in sour skimmed milk twice, and soup and vegetables once, seems to act most favorably.

Acidosis and Alkalosis in Children.—Depletion of the alkali reserve, which occurs in diabetic acidosis, is generally believed to be responsible for the development of acid products of the incomplete metabolism of fats, but the analyses of whole blood made by P. J. Cammidge (*British Medical Journal,* August 25, 1923) also compels the consideration of the incompletely utilized protein derivatives. In some cases, defective elimination in the kidneys, as in interstitial nephritis, aggravates the acidosis. Analysis of the feces in many cases reveals an excessive amount of inorganic ash content. This suggests an abnormal excretion of bases through the intestinal walls, which has a tendency to reduce still further the alkali reserve. Consequently, advanced acidosis, in which several of these factors are at work, is difficult to control, especially in children, in whom the metabolism is much less stable than in adults. Comparatively slight dietary changes in diabetic children often produce striking results; the addition of one egg or a dose of codliver oil may result in ketonuria, which disappears rapidly when the offending food is discontinued. An increase in the alkali reserve is probably partially responsible for the symptoms of pyloric stenosis and infantile tetany. Tetany can be produced experimentally in animals by the injection of alkalies. The analyses of the blood in the alkalosis of adults invariably indicate some ductless gland deficiency, which responds to the administration of the suitable endocrine gland extract and calcium by mouth.

Antitoxin in Diphtheria.—E. S. Platou (*Archives of Pediatrics,* September, 1923), in a comparative study of the usual methods of administration with the intraperitoneal method, draws the following conclusion: 1. A new method of administering antitoxin, namely, the intraperitoneal, is suggested for selected cases of diphtheria. 2. For infants and young children, the simplicity of technic in methods other than the intravenous is emphasized. 3. Local discomfort, an annoying factor in the subcutaneous and intramuscular methods, is absent in the intraperitoneal and intravenous methods. 4. General reactions are noted as a possible hazard, greater in the intravenous than in the other methods. 5. Absorption by the intraperitoneal route does not, of course, approach the intravenous where antitoxin is delivered directly into the blood stream. Early absorption of antitoxin, however, as shown by tests on the blood after intraperitoneal injection, is approximately five times greater after intramuscular injection. Within an hour it is more than sufficient to neutralize the circulating toxin in the blood in any case of diptheria. 6. Absorption by the intraperitoneal method is more rapid in infants than in older children. It is among the former that the procedure finds its greatest use. 7. Intraperitoneal administration of antitoxin is a safe and simple procedure. It is particularly applicable in advanced cases where suitable veins for intravenous administration are lacking, and in moderately advanced cases in which intravenous injection is not considered necessary or advisable, but where more rapid absorption is desired than can be obtained by the intramuscular method.

Importance of Early Administration of Intraperitoneal Infusions in Dehydrated Infants.—The experience of D. C. Wharton Smith, 2nd, and Edmund H. Kerper (*Archives of Pediatrics,* September, 1923) would support that of other observers, namely, that infusions of normal salt solution can be given intraperitoneally with a minimum of risk, practically no pain, and rapid absorption. This method is of great value in cases of dehydration where insufficient fluid can be taken by mouth. It is more effective if employed before extensive dehydration has begun. Repeated smaller infusions are probably of more value than larger amounts given less frequently.

Hemorrhages of the Newborn.—The study of a series of two hundred mature infants, by John Norman Cruickshank (*Lancet,* April 28, 1923) revealed the occurrence of more or less hemorrhage in seventy-seven per cent. If craniotomy cases are included the percentage is raised to eighty per cent. The incidence of stillbirth in the various groups of mature and premature infants shows several interesting features: 1. The difference of twenty-five per cent. in the rate for cases showing capillary oozings and petechiæ only. 2. The similar variation (twenty per cent.) in the rate for cases showing meningeal hemorrhage alone. 3. The twenty per cent. excess of stillbirths in the premature infants with meningeal and visceral hemorrhages over the stillbirths in the corresponding group of mature infants. From the examination of such figures it is evident that many infants with quite extensive birth hemorrhages are born alive and survive. In a number of the cases death had occurred from some quite independent condition, such as bronchopneumonia or nephritis, and it is probable that, but for the intervention of such a disease, the child might have survived beyond the period of infancy, with which one is particularly concerned.

Manifestations of Tetany in Children.—The investigations of Walter Pohl (*Monatsschrift für Kinderheilkunde,* September, 1923) confirm the basic fact that in the disease picture of young spasmophilic infants, the spasms appear in the foreground of the symptomatology, whereas in older children the laryngospasms appear more prominent. However, from this fact the conclusion should not be drawn that there are two temporarily different forms of tetany, but the author would rather call attention to the relationship to the frequently demonstrated peculiar excitability of the cerebral cortex of young infants. As a result of this markedly increased excitability of the cerebral cortex, the spasms are found to be predominant as a reaction in spasmophilic children in the first few months of life. Later the spasms become less prominent with advancing age, because the cerebral cortex gradually loses its excessive excitability. Consequently, the laryngospasms become the predominant element in the picture of tetany. However, very young children are subject to laryngospasms during the first four months of life not too rarely (about sixty per cent. of the author's series). It is not correct, therefore, to speak of a laryngospastic late form, as the laryngospasms again become less prominent in the clinical picture of tetanic phenomena during the second year of life.

GENITOURINARY DISEASES

Specificity of the Wildbolz Own Urine Reaction and Its Significance.—Walter Marcus (*Monatsschrift für Kinderheilkunde,* July, 1923) asserts: 1. The Wildbolz own urine reaction is specific. 2. The antigens excreted in the urine are similar to tuberculin and resistant to heat. 3. Positive reactions in definitely negative tuberculous individuals must be attributed to the constitutional factor of the responsive power of the skin. 4. Salt reactions or reactions of an inflammatory character may be avoided by a proper and areful preparation of the urine. 5. The Wildbolz own urine reaction is not a diagnostic aid in the determination of an actively tuberculous process.

Experimental Production of a Fatal Nephritis with a Filterable Virus of Nervous Origin.—C. C. Twort and H. E. Archer (*Lancet,* June 2, 1923) show that a fatal nephritis may result from the action of a filter passing virus in the absence of any other variety of parasite. Such a virus may cause death with urea etention, although the virus was obtained from diseased nervous tissue, and although the portal of entry was by the central nervous system. Cage infection from animal to animal, when the disease concerned is that from which the animal naturally suffers, is frequent, but this is not so in the case of fomites to animal, nor is it so when a heterologous virus is used, although the animal may be susceptible to artificial inoculation of such a heterologous virus. When immunity to a disease due to a filterable virus has become established the lipase content of the blood may be considerably increased, in many other diseases which excite a mononuclear activity, including blood diseases of doubtful etiology, there is a lowering of the lipase content of the blood during the active stage of the disease. Glycerin extracts of normal liver contain about ten times the quantity of lipase as compared with that of the blood serum or that of glycerin extracts of the spleen or lymphatic glands.

Nephroptosis: Its Causation, Symptoms and Radical Cure.—John J. Bell (*British Medical Journal,* May 26, 1923) is convinced that there is a congenital or family defect of shape of the renal pouch, which predisposes to an easy descent of the kidney, and that there is some inherent weakness in the suspensory tissues which disposes them to stretch easily. Furthermore, the paravertebral niches in which the kidneys rest are shallower and more open below in women than in men, explaining the greater frequency in women of nephroptosis than in men. Of the contributory causes, the most important are nutrition and occupation (long standing and weight carrying); those of lesser importance are repeated pregnancies, loss of intraabdominal pressure and renal tumor and calculi. The recumbent position of the patient is not absolutely reliable for examination. There are three ways of examining for nephroptosis: 1. Facing the back of the patient, the thumb is pressed deeply into the back below the last rib, the fingers grasping and compressing the intervening structures until rigidity passes off, when the kidney can be felt to slip suddenly on deep respiration. 2. The patient on a couch in the sitting position, the knees drawn up and body bent slightly forward, the examination being conducted as outlined above. 3. Fat patients are examined on the side with the knees drawn high up. With each method the compression of the anterior wall is commenced over the iliac fossa, gradually ascending.

The direct symptoms include intermittent dull pain in the small of the back, radiating from loin to thigh, increased on exertion. The reflex symptoms include headache, associated with giddiness and disturbance of vision, sometimes with prostration; there may also be symptoms referable to the cardiorespiratory, circulatory, gastrointestinal, urinary, reproductive, nervous and the chromaffin systems, with symptoms of toxemia. Nephropexy is the only available treatment. The author uses the almost vertical incision and divides the lumbar fascia transversely. The capsule is separated thoroughly from the muscles behind and then clipped through deep in, and stripped off the kidney with the contained fat and pushed deep into the wound and left there. Renal adhesions are divided, especially the renocolic ligament. A tongue shaped flap of capsule from the back of the kidney is raised and passed through the external arcuate ligament, drawing the kidney up into position, and the sus-

pension flap is stitched to the capsule below. The flap may be brought over the last rib. In addition, two silkworm gut stitches are passed through the lower portion of the capsule in the former of a letter U, with the free ends brought through the muscle and skin and tied over a pad of gauze. These are left in place for three weeks.

Useful Urinary Finding in the Diagnosis of Hydronephrosis and Pyonephrosis.—Jacob Rosenbloom (*Journal of Laboratory and Clinical Medicine,* June, 1923) reports the finding of globules of fat in the urine in three cases of pyonephrosis and two of hydronephrosis. In one case the fat droplets were found in the urine obtained by catheterization of the diseased kidney, while the catheterized urine from the normal kidney contained no fat.

Bacteriostatic Action of Urine After the Intravenous Administration of Mercurochrome to Normal Rabbits.—J. H. Hill and J. A. C. Colston (*Bulletin of the Johns Hopkins Hospital,* July, 1923) studied the bacteriostatic effect of mercurochrome on rabbits, which received intravenous injections of the drug in the following doses: one, two and one-half, five, and ten mg. to the kg. Inhibitive action was regularly obtained, and it is concluded that the clinical trial of moderate intravenous doses of mercurochrome is justified from the point of view of bacteriostatic action in bacillus coli infections of the urinary tract.

Inorganic Constituents of the Blood in Experimental Nephritis.—W. Denis (*Journal of Biological Chemistry,* June, 1923) produced an acute nephritic condition in rabbits by the administration of uranium nitrate or sodium tartrate. Although in every case but two there was a considerable increase in the nonprotein nitrogen of the blood, no constant retention of any inorganic component was noted, except in the case of the sulphate fraction, in which large increases were found when the dose of uranium was higher. When a less acute condition prevailed, practically no retention of even the sulphate ion could be demonstrated.

Camphoric Acid as a Disinfectant of Urine.—Erich Liebmann (*Schweizerische medizinische Wochenschrift,* July 12, 1923) reports that camphoric acid in doses of three to four grams daily has proved itself to be a valuable remedy in the treatment of acute and chronic cystitis and cystopyelitis. It is just as effective as the more modern urinary disinfectants and often acts when the others fail. Byeffects, such as heartburn, and after large total amounts hematuria and cylindruria, do not occur often. The gastric symptoms are an indication for the cessation of the administration of this remedy. Hematuria and cylindruria may be avoided by restricting the total doses to sixty gm. Although failures occur, they are not common. This remedy ought to be used more often than it has in the past.

Testing for Urobilinogen.—E. Herzfeld (*Schweizerische medizinische Wochenschrift,* October 5, 1922) maintains that the gradual increase of the fluorescence in the test in feces corresponds completely and in the urine it corresponds almost completely with a period of reaction which is necessary to achieve the optimum of intensity and therefore it cannot be taken as proof of the existence of a constantly present chromogen of urobilin. The p-dimethylaminobenzaldehyde test cannot be used as a direct reaction for urobilinogen, inasmuch as it is also constantly produced by pyrrol and indol bodies, which are left behind as a result of their incomplete elimination. There is, therefore, room for doubt as to the existense of urobilinogen as a constantly occurring preliminary step of urobilin. The extremely slight amounts of urobilinogen in the urine should rather be looked upon as a further reduction product, which may perhaps originate in the transition of the urobilin in the blood into the urobilin of the urine through the kidney.

Treatment of Bladder Tumors.—Robin Pearse (*Canadian Medical Association Journal,* September, 1923) says that if satisfactory results are to be obtained immediate cystoscopy is essential in every case of hematuria of unknown origin. Fulguration through the cystoscope is the method of choice for small papillomata, fulguration through the open bladder for large ones. Partial cystectomy is necessary for sessile carcinomata. Radium and x rays should be reserved for inoperable cases and recurrent carcinomata. Some cases are too far advanced for even this treatment. Patients must be reëxamined two months after operation and if free of growth, six months later and again after a further six months.

Excretion of Sugar in the Urine in Health and Disease.—Ludwig Kast, Hilda M. Croll and Victor C. Myers (*Journal of Laboratory and Clinical Medicine,* January, 1923) determined the amount of reducing substance (sugar) in twenty-four hour urine specimens of normal individuals and hospital patients by various methods. By the use of the Benedict and Osterberg method, it was found that there is an increase in the amount of reducing sugar excreted hourly after meals. The daily output of sugar was comparatively constant when the diet contained about the same amount of carbohydrate each day. Twelve normal adults showed from 0.62 to 1.23 gm. of reducing sugar on the average for twenty-four hours. Diabetes mellitus was the only disease in which there was a marked variation from the normal sugar excretion on ordinary diets, and in this disease, under dietary regulations, when the patient is sugar free the amount of sugar excretion is practically normal.

Prevention and Treatment of Chronic Gonococcal Prostatitis.—Kenneth M. Walker (*British Medical Journal,* September 15, 1923) believes that organisms may spread from an infected prostate by way of the lymphatics as well as the blood stream. Chronic prostatitis is almost invariably associated with a certain degree of infection of the vesicles. The differential diagnosis, however, of prostatitis and vesiculitis is important. Massage of the prostate from the rectum is the most important of therapeutic measures. 1. It empties the prostatic follicles of inflammatory products, and thus assists in the drainage of that organ. 2. It brings fresh blood and lymph to structures that are the seat of chronic inflammation, and hastens processes of repair. 3. It drenches the blood stream with antigen and provokes a reaction similar to that produced by the injection of a vaccine. The author does not believe in dilatation of the prostatic urethra by large sized bougies, or by special dilators (Kollman), as these result in traumatization. He is not very enthusiastic about vaccine therapy, especially in those cases in which the prostatic massage produces a reaction, but he does favor the use of sulpharsenol and silver salvarsan in obstinate cases, especially those complicated by rheumatism. The operation of prostatectomy has an unimportant place in the treatment of chronic prostatitis.

Immediate Prognosis in Nephritis.—O. L. V. de Wesselow (*Lancet,* July 28, 1923) calls attention to the fact that with the increasing application of chemical methods to the study of disease, the accuracy of prognosis in nephritis has made considerable advance. Most of the work has been concerned with the question of the retention of the nitrogenous waste products in the blood, and particularly with the urea content of the blood, because of the ease and accuracy with which this can be estimated. However, there can be no doubt that an estimation of the urea content of the blood in cases of severe azotemic nephritis does not necessarily settle the question of the immediate prognosis. An enormously increased blood urea content is not incompatible with recovery in acute cases, and even in chronic types of nephritis, in which the capacity for recovery is necessarily less, a high blood urea content does not imply speedy death. A confident prognosis can, therefore, scarcely be ventured on from an estimation of the blood urea alone, and several estimations at intervals of several days may be necessary to determine the prognosis. The determination of the plasma content in inorganic phosphorus (phosphate) is of considerable value in the determination of the prognosis in azotemic nephritis. Phosphate retention is associated with certain definite chemical changes in the blood, which are apparently of importance in the symptomatology of uremia. The retention of nitrogenous waste products is a useful guide to the degree of renal damage present, but in itself apparently harmless; phosphatic retention, on the other hand, appears to involve certain deleterious results. Though retention of phosphates is undoubtedly associated with impairment of nitrogenous excretion, and though when a series of cases is averaged, it is found that the rise in the plasma phosphate closely corresponds to the degree of urea retention, in individual cases marked differences in the degree of retention of the two bodies occur. There may be a high blood urea with a relatively low plasma phosphate content, and conversely. The cause of these differences in the degree of retention of the two substances in uncertain; the available evidence would appear to suggest that they are the result not so much of variations in excretions as of variations in the diet, and in the demand for phosphorus and nitrogen for anabolic purposes.

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Medicolegal Notes.

UNUSUAL CASE REGARDING LIABILITY FOR MEDICAL SERVICES

Under the Massachusetts Workmen's Compensation Act as amended in 1914, it is provided that the insurer shall in unusual cases, in the discretion of the Industrial Accident Board, furnish reasonable medical and hospital services and medicines required after the first two weeks following an injury. Three cases, two for medical services and one for hospital treatment, furnished to injured employees, came before the board, which found that each of them was an "unusual case" within the statute.

1. Paul Rys was injured May 17, 1921, and was treated from May 19 to September 28, always at the doctor's office, except on May 31 and June 1, when one finger and portion of another were amputated. The board found the injury "a very serious one, complicated by unusual conditions, including degeneration of the skin, laceration of the tissues, necrosis of the bone and tissues, and hemorrhage."

2. Horace Will White received an injury to his hand on October 6, 1921, and was treated by a doctor for five weeks, when he was able to return to work. The palm of his left hand was "cut and lacerated and gravel and dirt were ground into it." The wound was infected and blood poisoning set in. There were twenty-nine visits at the doctor's office and two at the patient's house, the treatment consisting of dressing the wound. The services of a specialist were not required.

3. Mark W. Willis broke his right leg on June 19, 1921. While still incapacitated and receiving compensation, "in March, on account of his knee being weak, he fell down and fractured the old fracture," according to his testimony. He was in the hospital from March 31 to May 7, 1922, and the liability of the insurer to pay the hospital bill for this period was in dispute. The board held this to be an unusual case, apparently because of the recurrence of the fracture. There was no medical or other evidence to show how the fracture occurred, beyond the employee's statement that he fell down.

On appeal, the Massachusetts Supreme Judicial Court held that in the case of Paul Rys, the nature of the injury, complicated as it was by the serious condition of the skin, tissues and bone, was such that it could not say that the finding of the board that it was an unusual case was unwarranted. This decree was affirmed.

In the case of Horace Will White it was held that the finding that it was an unusual case was not warranted. The injury was comparatively simple, and after the first surgical treatment it called only for dressings to prevent blood poisoning. The decree in this case was reversed.

In the case of Mark W. Willis, there being nothing to show any causal connection between the original injury and the second fracture, the case was recommitted to the Industrial Accident Board for further hearing on the question of the seriousness of the injury and its relationship to the original accident. Rys's Case, White's Case, Willis's Case (Mass.) 139 N. E. 505.

DIRECTORS OF HOSPITAL ASSOCIATION ENTITLED TO EXPEL MEMBER WITHOUT RECOMMENDATION FROM STAFF

The constitution and bylaws established for the government of the attending staff of physicians and surgeons of a hospital provided that: "Unprofessional and unethical conduct and violation of the rules of this staff shall constitute a cause for expulsion. Any member against whom charges have been preferred shall be notified of such charges, and shall have the opportunity of appearing before the attending staff and the board of directors in joint meetings in his own defense before final action shall be taken. Three fourths of the staff shall be necessary to recommend expulsion of a member." In a mandamus action brought by the partners in a firm of physicians and surgeons against the hospital association to compel their reinstatement as members of the hospital staff, the Wisconsin Supreme Court holds, State vs. La Crosse Lutheran Hospital Ass'n, 193 N. W. 992, that the bylaws do not in any way deprive the board of directors of their power to exclude physicians from practice in the hospital. "They merely operate to give the members of the attending staff a voice in the matter and to clothe them with advisory powers only. The staff may not expel; they may recommend. If they do recommend, the directors may still do as they please about expelling the member, and the board of directors may expel a member without any recommendation from the staff. This is a power lodged in them by the articles of incorporation, and probably one which they could not delegate if they would. The power to manage the affairs of the corporation includes the power to exclude physicians from practicing therein. If the exercise of this power constitutes a breach of contractual relations, the rights of the other party must be enforced in a proceeding to recover damages or to enforce specific performance. Mandamus will not lie."

FEES OF MEDICAL EXPERT WITNESS ATTENDING IN COURT BUT NOT CALLED

In a will contest the trial judge fixed the sum to be taxed for three medical expert witnesses at twenty-five dollars per day each. The case involved the mental competency of the testatrix, but late in the trial that issue was abandoned. Usually expert medical witnesses are asked hypothetical questions, and there is no need of their sitting in court to listen to evidence. These experts, however, were on hand from a distance, and might have been called as witnesses at any time. The Michigan Supreme Court therefore holds, Jones v. Antrim County Judge, 193 N. W. 873, that the contestant of the will, in laying the issue of want of mental capacity, could not complain on being taxed with the cost incurred to meet the issue. It was no objection that they were not sworn as witnesses, and were allowed the extra compensation provided by statute for opinion testimony, the presumption being that the trial judge knew their testimony would be as to matters of opinion.

RIGHT OF APPEAL FROM OHIO STATE MEDICAL BOARD'S ORDER

Section 1276 of the Ohio General Code grants the right of appeal from the action of the State Medical Board refusing to grant, suspending, or revoking a certificate to practice for the causes named in section 1275, but the section does not define the procedure for perfecting such appeal. An applicant for a certificate to practice under the Limited Practice Act, being refused a certificate, attempted to appeal to the Court of Common Pleas, which court dismissed his petition and the dismissal was affirmed by the Court of Appeals. The Ohio Supreme Court holds, Rutledge v. State Medical Board, 140 N. E. 132, that the right of appeal conferred by section 1276 is a substantial right, which does not fail because of the failure to provide the mode of perfecting it. Where a party desires to appeal and files in the Court of Common Pleas of the county of his residence a petition alleging his grievance against the board and demanding a certification of the papers and records in that court, it is held error to dismiss his proceeding without a hearing upon the claim so appealed.

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The Importance of a Knowledge of Reflexes in the Diagnosis of Pulmonary Tuberculosis*

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Medical men have long realized that the detection of small tuberculous lesions in the lung and the determination of whether they constituted an active or quiescent process was one of the most difficult diagnostic problems in medicine. With the results of modern treatment before us, which emphasize the necessity of diagnosing tuberculosis early if the patient is to secure the healing of his lesion at a time when he can be restored to usefulness with relatively little impairment of efficiency, it is the urgent duty of the medical profession to apply diligently the knowledge which we possess toward making the early diagnosis of tuberculosis as simple and certain as possible.

It would be doing great injustice to the many earnest, capable scientists who have devoted their lives to the study of tuberculosis not to recognize the great advancement which their contributions have made to the better understanding of the disease and to its earlier recognition; but it likewise would be unfortunate not to recognize that much more still remains to be learned before the clinical disease can be generally diagnosed early.

The ease and certainty with which tuberculosis is diagnosed has been greatly changed through, 1, the discovery of the tubercle bacillus; 2, the application of the various tuberculin tests; 3, the study of immunological reactions; 4, the examination by the x ray, and 5, the improvement in technic of physical examination.

The age through which medicine is now passing has been characterized by the preeminence of laboratory investigation and an unfortunate coincident inactivity in the field of clinical observation. But, valuable as laboratory examinations have proved to be, they must always be subsidiary to the examination of the patient, and be looked upon only as a means of gaining a better understanding of disease by adding the knowledge which they furnish to that gained by clinical observation. Laboratory examinations should always be interpreted in the light of the data obtained by a study of the patient; for it is the departures from normal physiological action which make up the picture of disease.

It is my purpose to describe certain clinical methods of diagnosis which I have personally developed and which I have found very useful in diagnosing pulmonary tuberculosis. Inasmuch as these are based upon a disturbance or exaggeration in the normal pulmonary reflexes, I shall introduce my discussion by a consideration of pulmonary innervation and the principles involved in reflex action.

INNERVATION OF LUNGS

The lungs are supplied by fibres from both the sympathetic and parasympathetic components of the vegetative system of nerves (Fig. 1). The sympathetics arise from the upper five or six thoracic segments of the spinal cord. The parasympathetics are represented by the fibres of the vagus. All reflexes which take place from the lung must be produced by stimuli which arise in the sensory or afferent fibres of these two systems and are carried to the cord and medulla, respectively, where they mediate with other neurons to complete the action.

PRINCIPLES OF REFLEX ACTION

A reflex is an action produced by a motor nerve, the stimulus for which is carried centralward by a sensory nerve. There are three parts to a reflex: 1, the afferent or sensory nerve which receives the stimulus, the receptor; 2, the efferent or motor nerve which effects the action, often called the effector, and 3, the synapse or junction at which point the stimulus is transferred from the receiving to the effecting portion. A reflex (Fig. 2) requires only two neurons for its completion; but it is doubtful whether so simple a reflex often or, even ever occurs. Most reflexes are very complex, some requiring many neurons for their completion: It is through such complex reflexes that correlation of activity takes place in widely separated portions of the body. It is through reflex action that the varied activities of the different and dissimilar organs of the body are moulded into one harmonious whole.

If disturbances in the normal reflexes of the body are observed and the nerve connections through which the reflexes are produced are known, they may be interpreted as symptoms of disease with distinct diagnostic value. Many reflexes have long been recognized in disease but they have rarely been prop-

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erly classified and evaluated. It is possible with the present knowledge of visceral neurology to interpret reflex symptoms which result from inflamed viscera with an accuracy and understanding which is surprising.

SOME COMMON REFLEXES IN DISEASE

Many reflexes are well known in clinical medicine, such as asthma caused by nasal irritation, the motor reflexes in the gastrointestinal tract (functional disturbances) resulting from diseases of the gallbladder, appendix and genitourinary organs; the reflex cough from irritation of the external auditory canal; spasm of the muscles of the abdomen when the gallbladder and appendix are inflamed, or when the stomach and intestines are the seat of ulceration.

REFLEXES ORIGINATING IN THE LUNG

There are many reflexes originating in the lung which manifest themselves when the pulmonary tissue is inflamed. The more common ones I have attempted to classify as follows:

REFLEX SYMPTOMS FROM THE LUNG

		Symptoms	Efferent Nerves
Inflammation of lung	Afferent nerves	Hoarseness	Laryngeal nerves
		Laryngeal irritation	Superior laryngeal nerve
		Cough	Laryngeal and nerves to all expiratory muscles with inhibition of nerves to inspiratory muscles
	Afferent through (vagus) Parasympathetics	Inhibition of heart	Motor fibres of cardiac vagus
		Increased muscle tonus and glandular secretion in gastrointestinal canal	Motor fibres of gastric and intestinal parasympathetic vagus
		Flushing of face	Sensory fibres of fifth trigeminus
		Spasm of sternocleidomastoideus and trapezius	Spinal accessorius
		Deviation of tongue from median line	Hypoglossus
		Degeneration of facial muscles	Trigeminus and sacialis
	Afferent through sympathetics	Flushing of ear	Third sensory cervical
		Dilatation of pupil	Motor from Budges center (lower cervical and upper dorsal)
		Spasm of muscles of shoulder girdle and diaphragm	Cervical motor nerves, second to eighth
		Lessened motion of chest wall, partly due to muscles spasm as above	Cervical motor nerves, second to eighth
		Pain above second rib and spine of scapulæ (superficial)	Cervical sensory nerves, particularly third, fourth and fifth
		Pain in muscles of shoulder girdle (deep pain)	Cervical sensory nerves, second to eighth
		Degeneration of skin and subcutaneous tissue above second rib anteriorly and spine of scapulæ	Cervical sensory nerves, third, fourth and fifth
		Degeneration of muscles of shoulder girdle	Cervical sensory and motor, second to eighth

The reflexes recorded in the preceding table are of varying importance in making up the clinical picture of pulmonary disease, but an understanding of the paths through which they are produced adds greatly to our understanding of the manner in which the disease affects various tissues. It has been particularly in the diagnosis of pulmonary tuberculosis that I have found an appreciation of these reflexes to be most helpful, although reflex disturbances are produced in all inflammatory diseases of the pulmonary tissue.

The motor reflex from the lung affects the muscles which are innervated by the cervical segments of the cord. These are the muscles of the shoulder girdle and the crura and central tendon of the diaphragm. While the reflex spasm is found in practically all of the muscles innervated by the cervical segments of the cord, spasm of the following has proved of greatest value in diagnosis (Fig. 3): sternocleidomastoideus; scaleni; pectoralis, major and minor; trapezius; levator anguli scapulæ; rhomboidei; diaphragm (crura and central tendon).

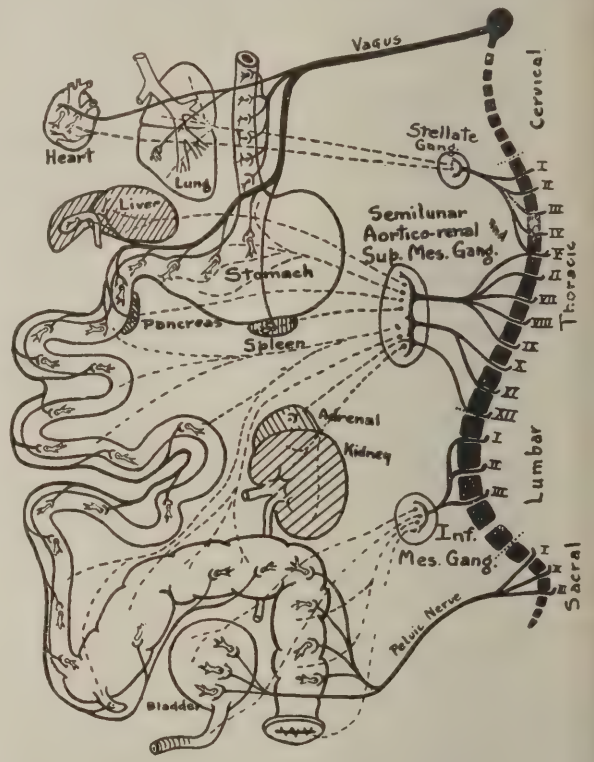

Fig. 1.—Schematic illustration of the double innervation of the enteral system, showing the intimate relationship between the lung and the other important viscera.

The vagus and pelvic nerves (parasympathetic) are represented by solid black lines extending to the organ. The connector neurons of the sympathetics are represented by solid black lines running to the ganglia. The postganglionic fibres running to the viscera are represented by dotted lines. The lung is innervated by both vagus (parasympathetic) and sympathetic fibres from the upper five thoracic segments. The sympathetic motor cells for the lung lie in the stellate ganglia.

In spasm of these muscles in the presence of pulmonary inflammation we are dealing with the same process as in the well recognized rigidity of abdominal muscles in appendicitis, cholecystitis, and ulcer of the stomach. Sherrington suggested the following law governing the segmental visceral reflexes: "For each afferent root there exists in immediate proximity to its own place of entrance in the cord (e. g., in its own segment) a reflex motor path of as low a threshold and of as high potency as any open to it anywhere." Mediation of the reflexes from the lung, however, do not take place in the segments that receive the afferent impulse from the inflamed organ. Instead, the impulses are carried upward by intercalated neurons and mediate with the motor neurons arising in the cervical segments of the cord. This shows how the path of reflexes is determined by

embryological conditions, for the lungs embryologically are given off from segments anteriorly to the heart, aorta and other thoracic viscera, consequently are connected with the skeletal structures by neurons which are innervated most anteriorly.

Increased muscle tension.—The patient must be in the erect position when this reflex is determined. The spasm of the muscles is recognized as an increased tension on palpation and is best appreciated when one lung only is involved, for then the muscles of the two sides can be compared. In cases where both lungs are involved it is necessary to have in one's mind the feel of a normal muscle as a standard of comparison. I find that most of the difficulty experienced by examiners arises from the fact that they do not know the degree of tension to expect in the normal and further fail to realize that it differs greatly with different individuals. Experience, however, will soon furnish the standard.

Limitation of motion of chest wall.—Spasm of the muscles limits the motion of the thoracic wall above by fixation of the sternum through the shortening which results in the sternocleidomastoideus, and the first and second ribs, through the scaleni; and below, through the shortening of the crura of the diaphragm. Limitation of motion may also be caused by other factors, at times, such as acute pleurisy or pleural adhesions, also by loss of pulmonary elasticity or loss of pulmonary tissue. It is commonly observed, also, as an accompaniment of early pulmonary lesions where these latter conditions do not obtain and where the motor reflex in the diaphragm and apical muscles seems to afford the only logical explanation, and it is upon this fact that its diagnostic value rests.

SENSORY AND TROPHIC PHENOMENA OF DIAGNOSTIC VALUE

According to physiological teaching the only true reflex is the one in which a sensory nerve transmits a stimulus to a motor nerve, but from the viewpoint of clinical observation there is a tendency to classify as reflexes all phenomena which are transmitted through an afferent nerve and produced by a second nerve which takes up or transmits the same impulse. So we speak of reflex sensory phenomena, such as the viscerosensory reflex of Mackenzie, and the reflex trophic phenomena in connection with the skin, subcutaneous tissue and muscles, such as I have described when the pulmonary tissue is the seat of such a disease as tuberculosis. I deem it much better to describe these phenomena as reflexes, thus indicating the fact that they are closely related to the motor changes noted in the muscles in their manner of production, rather than to confuse by being more strictly in accord with physiological definition.

SENSORY REFLEX FROM THE LUNG

The sensory disturbance which is best known clinically is pain, but this is only one of many phenomena, such as heat, cold, touch and pressure, which are recognized by the sensory system of the body. These sensations are all recognized by our sensory system and may all be disturbed by conditions which affect sensory neurons.

The skin areas which are supplied by sensory nerves arising from the same cervical segments of the cord that send out motor nerves to the muscles of the shoulder girdle and diaphragm show changes in sensation. This was pointed out by Head many years ago, particularly in reference to the sensation for heat, cold and light touch; but it is of the sensation of pain that I wish particularly to speak.

Acute pain is not as important a symptom in pulmonary disease, unless the pleura also is affected, as it is in pleural and peritoneal involvement and inflammation of the abdominal viscera; nevertheless it is a symptom often found.

Visceral pain is expressed through skeletal sensory

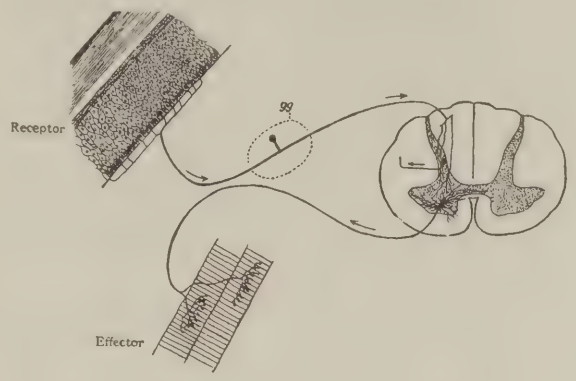

FIG. 2.—A two neuron reflex arc in a vertebrate; gg, ganglion. (Van Gehuchten.)
The receptor or sensory neuron receives the impulse and carries it to or through the ganglion on the posterior root to the cells in the anterior horn of the cord and transmits it to a motor or effector nerve which produces action in another tissue. This is the simplest type of reflex, probably not commonly found in clinical medicine.

nerves and referred to the superficial tissues of the body. The organs themselves do not possess receptors for the ordinary sensory stimuli, such as heat and cold, or the more painful stimuli, such as pinching and pricking, because they are shielded from these stimuli by their protected positions. Receptors for a certain type of sensation are only developed when they are required by the presence of the particular stimulus, and the lung, being a centrally located and protected organ, has never had cause for the development of a delicate pain sense.

The manner in which viscera express these sensory changes which accompany disease is through the more sensitive nerves which supply the surface of the body and which are exposed to and have receptors for all kinds of sensory stimuli. Increased irritability means an easier response. The stimuli passing centralward from the viscera cause an increased irritability in the cells of the afferent neurons over

FIG. 3.—Schematic illustration of pulmonary visceromotor reflex. Lines running between the lung and the spinal cord represent sympathetic nerves. Solid lines carry innervation to the lung. Broken lines carry the impulses from the lung to the cord, where they are transmitted upward in the cord to the cervical spinal motor nerves, which complete the reflex. The muscles involved in this reflex are shown in the cut. The path of the reflex is not as shown in the cut directly from the lung to the cervical portion of the cord, but back to the upper six thoracic segments, thence upward to the cervical portion of the cord by intercalated neurons.

which they pass. This irritability is transmitted to cells lying adjacent to them in the cord which supply sensation to the superficial tissues of the body. Because of the increased irritability of the cells of the sensory skeletal nerves they show altered sensation with a lesser stimulus than normal and the visceral

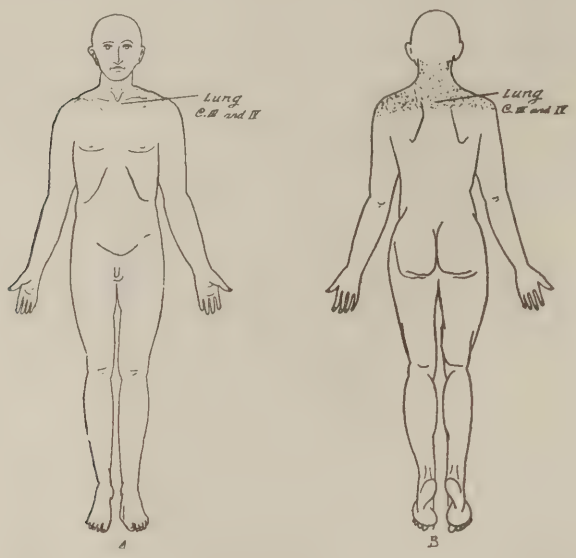

FIG. 4.—Pulmonary viscerosensory reflex; A, anterior view; B, posterior view. The third and fourth cervical sensory zones are involved, the same as are shown in the phrenic sensory reflex from the diaphragm; and on the right side the same as found in the hepatic viscerosensory reflex. Cutaneous pain from the lungs is for the most part, if not wholly, expressed above the second rib (A) and the spine of the scapulæ (B).

sensory effects are transferred to them as being the more highly sensitive nerves, and thus the changes in sensation arising in the viscera are transmitted to the skin and other superficial tissues. In this way we account for the pain expressed on the surface of the body when a viscus is inflamed. Thus, when the appendix is inflamed the surface of the body over the lower right quadrant of the abdomen shows pain to pressure or pinching, and the upper left quadrant when ulcer of the stomach is present.

While acute pain is rarely present as a reflex from the lung, yet there is a certain amount of irritability and uncomfortable sensation, also changes in touch, heat and cold perception which are transmitted to the surface of the body over the zones supplied by the cervical nerves. These areas consist of the tissues covering the neck and upper portion of the chest, above the second rib, anteriorly, and those lying between the occiput and the spine of the scapula posteriorly, as seen in Fig. 4.

Aside from the altered sensations noted in the skin and subcutaneous tissue above the second rib, anteriorly, and the spine of the scapula, posteriorly, there is also a soreness felt, particularly upon pressure, or increased by pressure if otherwise present in the deeper tissues. This reflex may be found in any of the muscles which show the motor reflex from the lung enumerated above, because they all receive their sensory supply from nerves which correspond to the motor nerves which supply them. Soreness over the pectoralis and the trapezius is often complained of by tuberculous patients, whether with or without pressure.

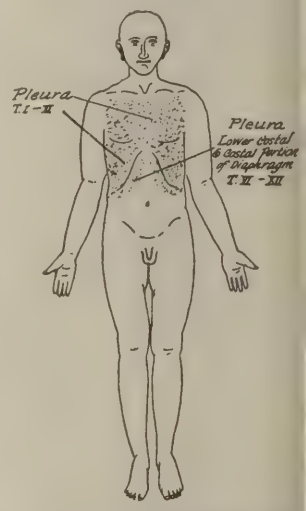

FIG. 5.—Pleural viscerosensory reflex. As shown in figure, pleural pain may occur over any portion of the chest wall; and, if the lower costal pleura and costal portion of the diaphragm are involved, the pain often extends down over the upper surface of the abdomen. It may extend over the entire abdomen.

SENSORY REFLEX FROM THE PLEURA

The sensory reflex from the pleura may be shown as any type of pain from a mild change in sensation to a very sharp excruciating pain. Pleural pain (Fig. 5) contrary to that arising in the lung, is expressed, according to the law of Sherrington, in the same segments of the cord that receive the afferent stimuli from the organ. Consequently, pleural pain may be expressed in any of the intercostal nerves. The pain in pleural involvement is confined fairly closely, as a rule, to the areas over the point of inflammation, except when the costal portion of the diaphragm is involved. Consequently, most pleural pain is expressed over the surface of the chest from the clavicle above to the costal border below. In case of pleural inflammation involving the costal portion of the diaphragm, however, the pain very often extends down over the abdomen. It may extend over any portion of the abdomen and is very often mistaken for the pain caused by inflammation of the underlying abdominal viscera. Not uncommonly are operations for appendicitis, gallbladder disease, and ulceration of the stomach performed upon patients because of a failure to recognize the fact that the pain from the basilar pleurisy may be expressed over the abdomen.

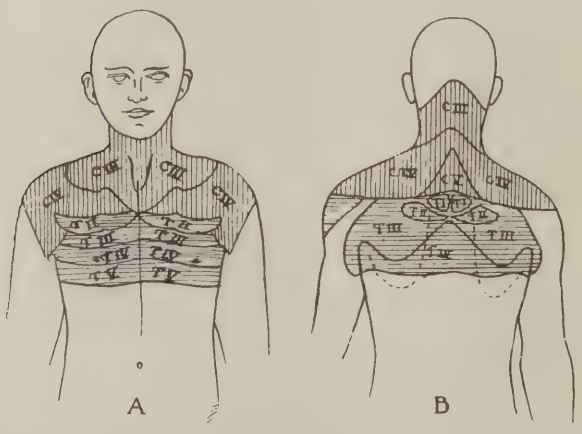

FIG. 6.—A shows by vertical lines the cutaneous and subcutaneous areas which are affected by the pulmonary viscerosensory and viscerotrophic reflexes. Anterior view. This viscerotrophic reflex is shown particularly as a degeneration of the skin and subcutaneous tissue supplied by the third and fourth, and slightly by the fifth cervical sensory roots. It will be seen that anteriorly this includes the tissues of the neck, shoulders, and chest down as far as the second rib.

B shows by vertical lines the cutaneous and subcutaneous areas which are affected by the pulmonary viscerosensory and viscerotrophic reflexes. Posterior viow. This includes the neck, shoulders, and that portion of the chest above the spine of the scapulæ. The interscapular tissues involving T.I, T.II, T.III, and T.IV show the hilus saucer of degeneration. Degeneration in area marked by horizontal lines caused by old pleural involvement.

It is well to bear in mind that the pleural pain may not only be superficial, but also may be expressed in the sensory nerves which supply the deeper structures, particularly the muscles whose sensory neurons are rendered hyperirritable by the afferent pleural stimuli in a manner similar to that mentioned above in connection with the lung.

TROPHIC REFLEXES FROM THE LUNG

The trophic reflex from the lung is expressed in tissues supplied by those neurons which receive and transmit stimuli from the lung to the superficial structures of the body (Fig. 5). Thus it will be seen that the skin areas which show sensory disturbances and the muscles which show motor and sensory disturbances when the lung is inflamed may all be the seat of trophic reflexes, if the inflammation becomes chronic. Just how the trophic reflex is produced is not quite clear. It is possible that it may be due to an actual injury done to the neurons which are responsible for the nutrition of the tissues; or it may be due to a disturbance in the normal blood supply through the sensory nerves which, as is well known, affects the blood supply of superficial tissues. While the motor reflex is a symptom of acute active disease and the sensory reflex may be present either in acute or in chronic processes, atrophy is always the sign of a chronic inflammation.

These trophic reflexes are often evident upon the surface of the body. By inspection alone, or by inspection supplemented by palpation, when the lung has been the seat of an old lesion or is the seat of a chronic inflammatory process, one can see a thinning out of the skin and subcutaneous tissue between the second rib and the angle of the jaw, anteriorly, and between the spinous process of the scapula and the base of the skull, posteriorly (Fig. 6). The muscles which present this atrophy best under the fingers and eye of the clinician, are the sternocleidomastoideus, pectorales, trapezius, and the levator anguli scapulæ.

The degeneration in the skin and subcutaneous tissue shows as a thinning out, a lessening in bulk. In the muscles it shows not only as a thinning and lessening in bulk, but in the long and flat muscles as a change in solidity and rotundity. Instead of the muscle being one solid mass, it often becomes a series of bundles. All the tissues show a loss of elasticity —a feeling of doughiness—upon palpation.

After one has once grasped the neurology which underlies these changes and attained the skill at detecting them, he has at a glance very important suggestions as to the presence or absence of past or present chronic inflammation in the lung. The trophic reflexes combined with the motor reflexes of the lung present accurate signs of the past and present history of disease in the organ.

Airplane Tests of Hay Fever Pollen Density in the Upper Air

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In the application of general preventive measures against hay fever, it is important to ascertain the distance to which pollen may be carried by the wind in sufficient numbers to produce hay fever. An important factor in determining this potential area is the altitude at which these pollens may be found in the air.

POTENTIAL AREA OF POLLENS

Our early researches in hay fever were conducted in Orleans Park, my mountain estate near Ashville, N. C., where, in spite of the altitude of 2300 feet, the short ragweed (Ambrosia elatior) is very prevalent (1). When these investigations were transferred to New Orleans, it was found that the short ragweed within the city's limits, was replaced by the long ragweed (Ambrosia trifida). By the middle of September, however, in addition to those of the long ragweed, the pollen of the short ragweed appeared in large numbers on the exposed pollen plates, although the nearest growth of this weed was five miles distant. By the method of direct wind convection, the distance traversed by the pollen appeared inexplicable.

A common cause of early spring hay fever in Austin, Texas, is the mountain cedar (Juniperus sabinoides) whose pollen I first discovered on pollen plates exposed by Dr. Samuel Key of that city. With a view of controlling this form of hay fever, the question was submitted in 1922 as to what distance the male trees, which generate the pollen, should be removed from the city, and my advice was five miles. This was based on an extensive experience in observing the convection of hay fever pollens as observed on pollen plates, but the reason for pollen traversing such a distance could only be surmised at that time.

In order to establish a scientific basis for determining the convection of hay fever pollens, it was found necessary to ascertain the altitude at which they are found in the air. The pollen plates exposed on the tower of a bank building in New Orleans (400 feet) demonstrated that the number of pollens at this height equalled those found on the earth's surface. Pollen plates exposed on the summit of Mount Hope in Orleans Park also showed pollens in numbers differing but little from those exposed at Laurelia Villa, 1000 feet below this level. It was therefore decided to employ some means by which the pollen plates could be exposed to the limit in altitude of pollen infestation.

AIRPLANE TESTS

In the selection of the most practical method of exposing these plates at different altitudes, the airplane was given the preference, as it has many advantages over kites and balloons, as long distances may be covered in a short time, and the process is

directly under control. We were fortunate in securing the cooperation of Mr. B. R. Coad, of the United States Department of Agriculture, in charge of the Delta Laboratory stationed at Tallulah, La., who supervised the flights by which the pollen tests were made.

The airplane tests were made at intervals from June 19th to October 12th, the greatest altitude

Fig. 1.—De Haviland 4B airplane with which the tests of the hay fever pollen density in the upper air were made.

attained being 15,000 feet, and the plates exposed at intervening levels of 1000 feet. The plates used are ordinary microscope slides (one inch by three inches), one side being smeared with a thin film of glycerine or vaseline. The former has the advantage of facilitating the microscopic examination by accepting the Lugol solution for staining, but is easily dried by the great velocity of wind to which the plates are exposed in the airplane, and which is not the case with the vaseline film.

The plates are exposed in a holder expecially constructed for these tests, and is attached to the right side of the rear cockpit (Fig. 1, 2, 3), where they receive the full blast of the propeller. The airplanes used were De Haviland 4B. Extreme care was taken to maintain uniform elevations and a fairly constant flying speed. The propeller was operated at about 1400 to 1450 revolutions a minute during these exposures, the forward speed of the plane being about eighty miles an hour. The exposures were made in the vicinity of Tallulah, but

Fig. 2.—Ready for a test flight.

the flying was almost constantly over cleared or cultivated areas, care being taken to avoid any length of time over timber.

The exposure of the pollen plates from the airplane presents no little difficulty. The operator is greatly cramped for space in the rear cockpit of the plane, and the wind current is so great that everything must be held very tightly. The air at the higher altitudes is also intensely cold. Even at five thousand feet, it is very uncomfortable, and at ten thousand to fifteen thousand feet it is necessary to wear so much clothing that it is difficult to move, and the hands are quickly numbed with the cold if the attempt is made to work without gloves.

PRELIMINARY TEST FLIGHTS

The first tests were made on June 19th, in order to determine the best length of time of exposure. The plates were exposed for thirty seconds, and one and two minutes respectively at elevations of 200, 500 and 1,000 feet. These lengths of time proved inadequate, and, in the next flight, the exposures were made for ten, twenty, and thirty minutes at elevations of 1,000 and 2,000 feet. The twenty minute exposure gave the best results, as the ten minute appeared insufficient and the thirty minute exposure to the great wind velocity caused the glycerine to dry and disappear from the slide. The glycerine film was used in the entire

Fig. 3.—Changing the pollen plate in the specially constructed plate holder.

series, but vaseline was employed in a number of exposures as a check on the tests.

The flights were made while the weather conditions were favorable, and when there had been no rain for at least a week. The wind during the series, as indicated by the anemometer records, varied from two miles to fifteen miles an hour. The time of the plate exposures was twenty minutes.

In the first series of tests, the exposures were made at the various levels during the ascent of the airplane. This proved tedious and difficult, and, in the last two flights of the series, this process was reversed, and the exposures made at 2000 feet intervals during the descent. The first exposure was made at 15,000 feet, the second at 13,000, and thus continued at each odd figure in thousand feet elevations to 1,000 feet. In the following series, the exposures were also made at intervals of 2000 feet, but at the even figures in thousand feet, the two flights thus completing the combined series in intervals of 1,000 feet. This method resulted in expediting the time of each series of tests, so that the duration of each flight was reduced to three and a half hours.

When the exposures had been made, the plates were carefully sealed in special cases, and sent to our New Orleans laboratory, where they were

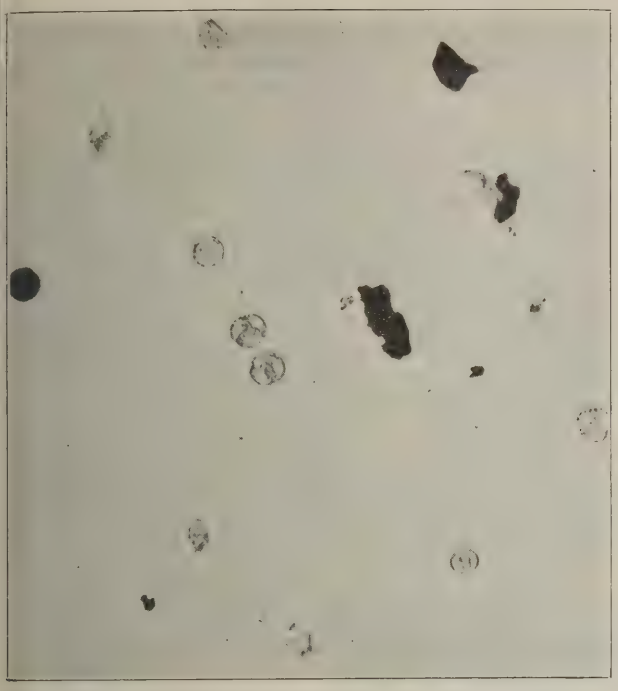

FIG. 4.—Photomicrograph of pollen plate exposed at 2,000 feet elevation, showing ragweed and grass pollen. x 200 diameters.

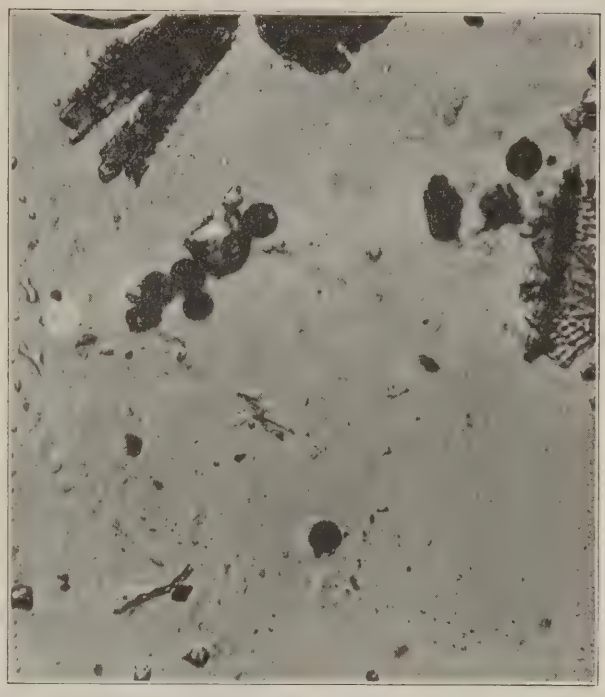

FIG. 5.—Photomicrograph of pollen plate exposed at 3,000 feet elevation, showing ragweed and marsh elder pollen. x 200 diameters.

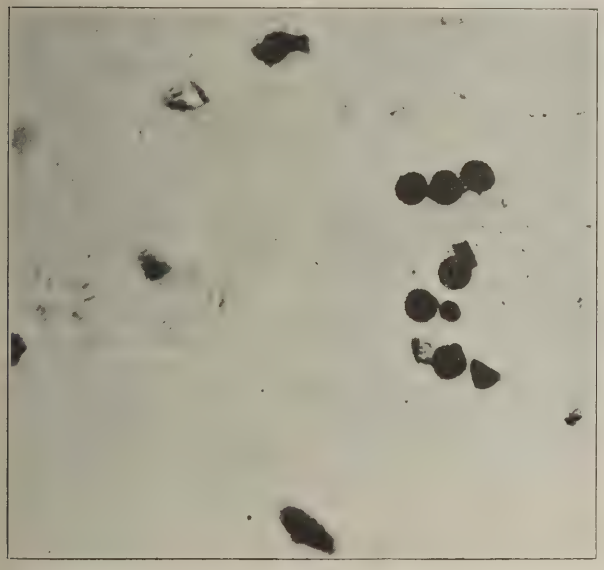

FIG. 6.—Photomicrograph of pollen plate exposed at 4,000 feet elevation, showing short and long ragweed pollen. x 200 diameters.

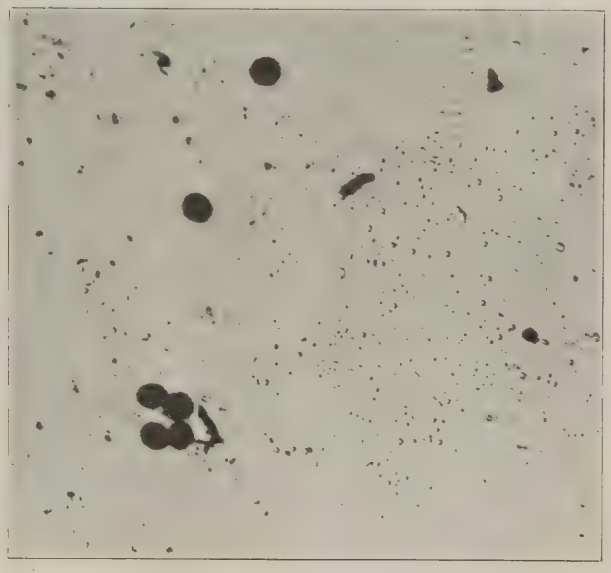

FIG. 7.—Photomicrograph of pollen plate exposed at 5,000 feet elevation, showing long ragweed and grass pollen. x 200 diameters.

stained, inspected and recorded, and, in some cases, photomicrographed.

RESULTS OF TESTS

An analysis of the records of these tests shows that the number of pollens in the air, under favorable conditions, is fairly uniform at altitudes of from 1000 feet to 4000 feet. This is shown by the record of September 24th, which in Louisiana is near the apex of the ragweed pollinating season.

2000 feet elevation, 126 grass pollen, 3096 ragweed pollen, 189 other pollen. Total 3411.

3000 feet elevation, 63 grass pollen, 2346 ragweed pollen, 177 other pollen. Total 3186.

4000 feet elevation, 51 grass pollen, 3192 ragweed pollen, 189 other pollen. Total 3432.

This is also shown in the records of October 11th and 12th, when the pollination of the ragweeds was on the decline.

1000 feet elevation, 84 grass pollen, 708 ragweed pollen, 151 other pollen. Total 943.

2000 feet elevation, 72 grass pollen, 489 ragweed pollen, 180 other pollen. Total 741.

3000 feet elevation, 36 grass pollen, 744 ragweed pollen, 31 other pollen. Total 811.

4000 feet elevation, 90 grass pollen, 756 ragweed pollen, 126 other pollen. Total 972.

At elevations of 5000 feet and 6000 feet there was a uniform decrease in the number of pollens, but the density was still considerable. The average of the records for October 11th and 12th are as follows:

5000 feet elevation, 135 grass pollens, 105 ragweed pollens, 124 other pollens. Total 364.
6000 feet elevation, 102 grass pollens, 258 ragweed pollens, 120 other pollens. Total 580.

Above the altitude of 6,000 feet, there was an abrupt fall in the number of pollens, indicating that the ascending air currents, which had carried the pollens to these heights, had ceased to be operative. From 7,000 feet to 14,000 feet, the diminished number of pollens maintained a fair average, the plates showing about sixty-five pollens at each additional 1,000 feet elevation. At an altitude of 15,000 feet, however, the grass pollen had disappeared, and it was found that there were only eight ragweed pollens adhering to the plate.

VARIETIES OF POLLENS

The ragweed pollen in this report includes both the short and long ragweeds (Ambrosia elatior et trifida), and also the marsh elder (Iva ciliata) which is also a member of the ragweed (Ambrosiaceæ) group (2) and which rivals the ragweeds as a cause of fall hay fever in this section of Louisiana. The two ragweeds and the marsh elder each have spiculated spherical pollen, differing only in size, the short ragweed being fifteen microns, the long ragweed twenty microns and the marsh elder twenty-five microns in diameter.

They also respond equally to the Scheppegrell stain (Lugol solution one part, distilled water one part), appearing a light brown in the field of the microscope. The grass pollens are easily identified, as they appear blue black in this stain (Figs. 4, 5, 6, 7).

The other pollens of this list include those of the careless weed (Amaranthus spinosus) and yellow dock (Rumex crispus), which at that season of the year are not sufficiently common to cause hay fever and of other anemophilous trees and plants, which are negative in hay fever or are of minor importance.

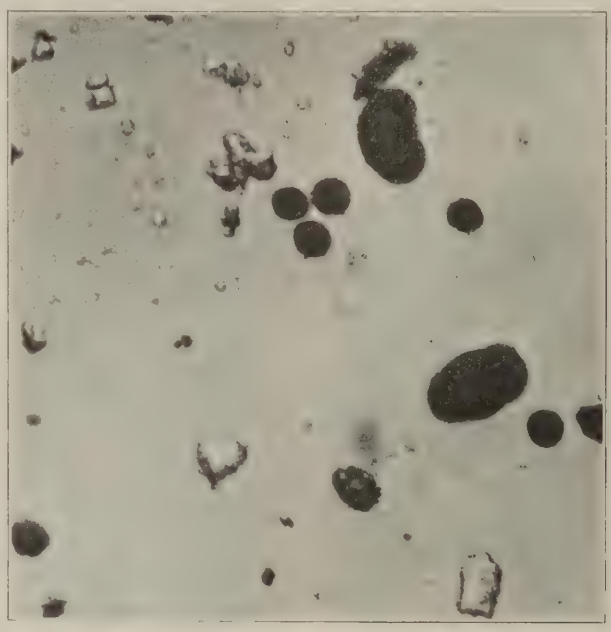

Fig. 8.—Photomicrograph of pollen plate showing pine and grass pollen. x 200 diameters.

PINE TREE POLLENS.

One of these pollens, that of the pine tree, although negative in hay fever, is of interest on account of the great distance which it must have traveled. Although out of season, the pine pollens were found in small but fairly uniform numbers up to an elevation of 13,000 feet. The Delta section of the Louisiana, over which the flying was done, is solely a country of hard woods. The nearest pines are in the neighboring State of Mississippi, a few scattering pines being found about ten miles east of Vicksburg. These pollens must, therefore, have traveled not only vertically to these high altitudes, but also horizontally not less than twenty miles. The pine pollens are provided with two wings or parachutes (Fig. 8) which enable them to traverse distances out of proportion to their size (diameter fifty microns).

POLLENS IN THE UPPER AIR

The reason for the pollens being abundant up to an elevation of 4,000 to 6,000 feet is that they are conveyed upward by the ascending air currents to the height at which the cumulus clouds usually form. When these ascending convective currents cease to be active, the descent of the pollen commences, unless it again meets ascending air currents or is precipitated by rain. If a wind is carrying the pollen horizontally while it is thus falling, the distance which it will be carried is equal to the product of the velocity of the wind multiplied by the time of the fall (3).

The records of the exposed pollen plates do not prove that there is a uniform distribution of pollen in the area in which the flights were made. On the contrary, the pollen clouds change their position in accordance with the atmospheric conditions of the traversed territory. These vary constantly, as demonstrated by the behavior of airplanes over terrain of various characters. Vertical air currents of various velocities are constantly encountered, so that it is necessary to compensate almost continuously for them in operating the control of the plane. Even at considerable elevations, a difference is observed in the behavior of the air over different topographical features. In crossing a comparatively small river, for instance, rising air currents are encountered which bump the plane sharply; while on solid woodland, descending air currents are found which tend to draw the plane downwards. These conditions tend to reverse, moreover, as the day progresses and as different objects absorb or radiate additional heat. In spite of these varying conditions, the results of this series of tests prove that during the active pollinating season of hay fever plants and trees, clouds of pollen conveyed by the ascending air currents are found as high as 4,000 to 6,000 feet above the level of the earth, and that their potential area, unless the pollen is precipitated by rain or descending air currents, easily extends five or more miles from their source, a fact already demonstrated by our exposed plates.

PHYSICAL EFFECTS

The pollen clouds in the upper air explains the persistent presence of pollen at lower levels, as evidenced by the records of our pollen plates. With the exception of periods during rain, and for a short time afterwards, pollens are found in varying numbers during the whole pollinating season of the ragweeds and other hay fever plants and trees.

In our New Orleans laboratory, the pollenometric records show a marked increase of pollen during the prevalence of northerly winds, which was apparently explained by the presence of the greater areas of hay fever weeds north of the city. The increase in the pollen count, however, and a corresponding aggravation of the symptoms in hay fever subjects, was also recorded at our stations in other cities during the prevalence of northerly winds, where the weed distribution is almost uniform in all directions.

As the result of these airplane tests, demonstrating the presence of pollen clouds in the upper air, these phenomena are easily explained. The fall in temperature from the cold winds results in descending air currents, and a corresponding fall in the pollen clouds as long as these maintain, or until the supply of pollen in the air is exhausted.

The existence of these pollen clouds also explains the well known fact that hay fever subjects experience aggravation of their symptoms after sunset, which was formerly difficult to explain. The descending air currents, resulting from the fall of the temperature, allows the descent of increasing numbers of pollen, with proportionate discomfort to hay fever subjects.

SPORES OF FUNGI

In addition to pollen and particles of dust, spores of fungi were fairly common on all plates exposed up to an elevation of 11,000 feet, and some even as high as 13,000 and 15,000 feet. As spores are not responsible for hay fever, no special effort was made to count or identify them, but their presence is of importance as showing the aerial method of distribution of pathogenic germs of plant and animal life. Among the spores of the different genera of pathogenic fungi found on these plates, the most common were those of the conidiophores, alternaria and urediniospores, which are of importance in the study of plant epidemiology investigations.

LEGISLATION

Since hay fever pollens are commonly found in large numbers as high as 6,000 feet, and may thus be carried ten or more miles from their source, the effective control of hay fever by the enactment and enforcement of municipal antiweed ordinances is manifestly insufficient. While such laws are of undoubted assistance, complete relief can be obtained only by legislative cooperation of the various states or of the Federal Government.

SUMMARY

1. Airplanes furnish a practical method of testing hay fever pollen density in the air.

2. During the pollinating season of the grasses, ragweeds and other common hay fever plants, their pollen is found in large numbers in the air up to an altitude of 4,000 feet, and in diminished numbers (sixty-five per cent.) at from 4,000 to 6,000 feet. From this altitude to 15,000 feet the pollens are present but are relatively few in numbers.

3. Unless precipitated by rain or descending air currents, pollen clouds remain in the air during the whole pollinating season of the plants which generate them, the fallen pollen being replaced by new pollen.

4. The existence of these pollen clouds and their change of position due to descending air currents explain the increase of hay fever pollen during the prevalence of cold winds and after sunset.

5. The large potential area of hay fever pollen, resulting from the clouds of pollen in the upper air, demonstrates the necessity of State and Federal laws in the effective control of hay fever in communities.

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The Surgical Aspect of Abscess of the Lung*

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In hardly any other part of the body are the special branches of medicine and surgery so closely interallied, the borderline so faintly and indistinctly drawn between them as in the treatment of pulmonary abscess.

ETIOLOGY

Suppuration of the lung is due to the same causes as suppuration in any other part of the body, some of which are the following:

1. Traumatism, inclusive of the entrance of a foreign body from within (bronchial tree) or without.
2. Acute or subacute typical inflammation, as it occurs consecutive to the entrance of microbes, such as the pneumococcus, staphylococcus, or streptococcus.
3. Chronic inflammation, tuberculosis and syphilis.
4. New formations: tumors.
5. In exceptional cases we find actinomycosis, hydatid, leprosy, etc., as etiological factors.

If we substitute the term foreign substance for foreign body, then we have at once the various possibilities, namely, solid, semisolid and liquid foreign substances, the latter being represented by mucopus, blood, stomach contents, and infected water. The aspiration of a foreign substance certainly is the principal cause of lung suppuration; the next in order of frequency is embolism. It depends on the virulency of the causative element in either case, whether an acute malignant gangrene will develop.

NOMENCLATURE

At present there exists considerable confusion regarding the nomenclature of this condition. I believe we shall do best—excluding the most fulminant, rapidly progressive suppuration with acute gangrene —to differentiate as follows:

*Read before the New York Academy of Medicine, at its stated meeting on February 1, 1923.

1. The ordinary lung abscess as it usually occurs subsequent to pneumonia or influenza.

2. The typical bronchiectasis, that honeycomb like multilocular diffuse suppuration of one or more lobes of the lung, which, to my mind, probably develops as the result of a congenital malformation in the greatest majority, if not in all of the cases.

3. Bronchiectatic lung abscess, which represents local gangrene.

THERAPY

Early treatment, one might perhaps best term it prophylactic treatment, is of the utmost importance in beginning lung abscess due to aspiration. This prophylactic treatment means bronchoscopy, and that at as early an hour as possible, no matter whether the patient is deathly sick with chills and high fever, continuous cough and foul sputum. It stands to reason that the sooner the infecting foreign substance is removed the better for the patient. In that respect bronchoscopy no doubt is superior to artificial pneumothorax. To my mind the latter, which is also efficient in this class of cases, is to be resorted to only if repeated bronchoscopic suction with intrabronchial treatment fails. Artificial pneumothorax is, after all, surgical interference and in its effect undoubtedly a great deal more complicated than bronchoscopy. I had two beautiful cases of beginning lung suppuration, one following the aspiration of stomach contents during general anesthesia, the other occurring subsequent to tonsillectomy. Both patients were completely healed by means of bronchoscopic aspiration and bronchoscopic aspiration with endobronchial treatment at the hands of the late Dr. Lynah, in conjunction with the specialist at our hospital, Dr. Jordan. We also had at the Lenox Hill Hospital a number of subacute and chronic cases of lung suppuration, all due to aspiration, which were cured by bronchoscopic treatment, four having been under the care of Dr. Jordan and Dr. Kernan, Jr.

As we know, one third of these early cases of lung abscess due to aspiration heal spontaneously. But to say that therefore bronchoscopy is not required would, of course, be an unscientific statement. How can we know who of say thirty such patients will be the fortunate ten who will need no further treatment? Therefore bronchoscopy at the earliest moment possible is clearly indicated in *every* instance of beginning suppuration of the lung due to aspiration. A trained bronchoscopist is the best friend of these patients as well as of the surgeon. For by means of suction promptly applied he lays the foundation for improvement or cure in many cases and absolutely fixates the diagnosis as to which of the lobes is affected.

OPERATION

As regards operation, it seems to me that each of the three subdivisions of subacute and chronic, nonspecific lung suppuration has its special surgical treatment. But before entering upon a discussion of the treatment of nonspecific, subacute, and chronic lung suppuration, let me say a few words on the specific type, tuberculosis and syphilis.

Every patient with abscess of the lung should have a Wassermann test made; if negative in the face of the suspicion of syphilis, primary antispecific régime is clearly indicated, for we all know that a negative Wassermann is not decisive in any case of trouble of this type. I have seen a seemingly hopeless, far advanced case in a man with pulmonary suppuration and four plus Wassermann, who completely recovered with the help of salvarsan, mercury and the iodides. Today he is a prosperous business man.

As to the operation for advanced pulmonary tuberculosis, the thought that operative surgery nowadays may still bring help after expert specialistic internal and hygienic treatment, inclusive of the artificial pneumothorax, has failed, must be most stimulating and encouraging to the ever hopeful tuberculous patient. Formerly hopelessly lost and left to die, two thirds, that means from sixty to seventy per cent. of these patients, if properly selected, can be improved or cured. Surely, a most wonderful advance! There can be no doubt that patients suffering from pulmonary tuberculosis, advanced to a stage where pulmonary and costal pleuræ have become adherent and the artificial pneumothorax is technically impossible, particularly if associated with cavity formation, are clearly borderline cases today. Collapse and compression are the watchwords, and this is made possible by multiple rib resection, from the tenth to the first inclusive, best in stages and under local and regional anesthesia. If necessary unilateral artificial paralysis of the diaphragm by means of phrenicotomy at the neck has to be added, sometimes also loosening of the apex of the lung (apicolysis) with filling of the resulting cavity by transplanted fat or omentum, or the implantation of the pectoral muscle or by heteroplastic material (paraffin). The enforced complete rest plus compression of the lung will produce intensive connective tissue formation, also—for a time at least—chronic local hyperemia, one of the most efficient means of healing tuberculosis.

More recent observations have shown that progressive tuberculosis of the lung in the early stage, with hemoptysis, reacts most favorably to primary radical phrenicotomy, as emphasized by Goetze of Professor Schmieden's clinic at Frankfort. He urgently advises never to let a patient, who was improved by artificial pneumothorax, stop the treatment without having added resection of the phrenic nerve. If this is done, the improvement in all likelihood will be permanent. Otherwise recurrence of the trouble is to be expected in many instances.

Those of us interested have seen most remarkable results in cases of advanced pulmonary tuberculosis by means of operative treatment. One of my patients, hopelessly ill at the time of operation in 1918, is today actively engaged in business down in Texas, selfsupporting and able to climb hills; besides he enjoys the happiness of married life. Even cases of advanced pulmonary tuberculosis complicated with empyema can still be helped by operation.

A closing word on the operative treatment of nonspecific subacute and chronic lung suppuration. We must learn to refine the diagnosis and find out as soon as the patient comes under our care, what type of suppuration we have to deal with. Radiography and bronchoscopy will aid the clinician.

To cure typical bronchiectasis, due in most cases, I believe, to a congenital malformation, as mentioned above, requires lobectomy. Here this radical operation will have its greatest triumphs. Usually only one lobe, mostly the lower, is affected; in exceptional cases it is found bilateral. If the operation is contra-

indicated or not permitted, ligation of the respective branch of the pulmonary artery with or without subsequent extrapleural thoracoplasty may bring relief. Of three patients thus successfully operated on by me—successful, at least so far as the operation was concerned—I have seen one recover almost completely.

The operative treatment of bronchiectatic lung abscess depends on the condition of the patient and other circumstances. If he is not ready to undergo lung resection which still has a mortality of from forty to fifty per cent., a more conservative operative treatment, namely the formation of a lung lip fistula which drains and thoroughly ventilates the existing cavity or cavities either temporarily or permanently —except when the patient later on agrees to have it closed—holds out well founded hopes for a cure. Certainly not all these cases require lobectomy in order to relieve the terrible distress. We should not do lobectomy in every case of bronchiectatic lung abscess any more than we should extirpate every suppurating kidney. Of course, with the lung we may be less conservative, for Nature has endowed our system most liberally with lung tissue. Four big lobes —not counting the small right middle lobe—take care of the proper oxygenation of the blood. We can get along very well with one or two less. The future will have to show whether the following distention and hypertrophy of the remaining lung tissue will allow the surgeon to go still further in his radical work under pressure of pathological conditions. Still, as just said, lobectomy at present is still a dangerous procedure, and as patients of this type coming under our care are usually much reduced, we have to weigh carefully what should best be done, so long as saving the patient's life is the primary consideration. I have seen four of my patients, dangerously ill before, make a most satisfactory recovery with the help of the more conservative intervention: the formation of a temporary or permanent lung lip fistula, which not only drains the lung cavity or cavities, but also the communicating bronchus or bronchi. Two further patients are still under treatment. The lung lip fistula represents a wide canal leading into the focus of the lung and acts like a chimney. In most instances it is wide enough to admit the air required for the maintenance of life, if the patient breathes through the fistula, closing his mouth and compressing his nostrils. The external opening, becoming finally lined with scar tissue all around, usually does not close spontaneously.

It is most encouraging, also, for these patients to know that operative surgery of today holds out to them the hope of great improvement or even cure, if the trouble is not too far advanced and has not yet by aspiration attacked all the lobes of one side or even one of the other in addition.

Here, too, medicine and surgery, the two faithful old sisters, are in close therapeutic cooperation for the benefit of these sorely afflicted.

Lung Abscess*

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Lung abscess is neither rare nor novel, but unpleasantly frequent and all too frequently unpleasant. Previous to ten years ago this condition received relatively scant attention in the literature, and it was in 1912 that Richardson published the first report of a lung abscess following tonsillectomy. Since then an abundant literature has arisen, stimulated undoubtedly by the dire results occasionally seen after tonsil operation. A lung abscess following pneumonia was unfortunate but involved no direct responsibility for the doctor; a lung abscess following tonsillectomy was due to his direct intervention, and the rapidly growing literature is evidence of his appreciation of that responsibility. Suits for damages in these cases are being brought and serve to emphasize further his accountability.

While I am aware that statistics may at times be anything but informing, and sometimes misleading, I hope that these will at least be of some interest. I have gathered together some Bellevue Hospital statistics of both the quick and the dead.

CLINICAL STATISTICS

These cover a period of five years, 1918-1922 inclusive. During this time there were admitted to the hospital in 1918 twenty-two cases of lung abscess with eleven deaths; in 1919, twenty-five cases with eleven deaths; in 1920, twenty-eight cases with fifteen deaths; in 1921, forty-three cases with twelve deaths; and in 1922, fifty-one cases with eighteen deaths. In all 169 cases with sixty-seven deaths, a mortality of about forty per cent. As in the dead house statistics (to be given later), bronchopneumonia was the most frequent cause. Eleven followed tonsillectomy. Some figures from the Massachusetts General Hospital quoted by Whittemore give seventeen out of thirty-two lung abscesses as due to tonsillectomy.

Dr. Isabella Herb, of the Presbyterian Hospital of Chicago, reports that in a total of 12,045 operations on the tonsils, lung abscess developed in only two. It is not stated over what period of time these operations extended but it was probably not under three years. Dr. Bevan, of the same hospital in Chicago, reports twelve cases of lung abscess in three years following tonsillectomy. This illustrates some of the vagaries of medical statistics.

Moore, of Philadelphia, has estimated that in every 2,500 cases of tonsillectomy one lung abscess will develop; Fetterolf places it at one in 780 operations. Whatever the percentage, there can be no doubt that tonsillectomy is a fruitful source.

*Read before the New York Academy of Medicine at its stated meeting, February 1, 1923. (*From the Third Medical Division of Bellevue Hospital.*)

POSTMORTEM STATISTICS

In the past eighteen years (i. e., since complete protocols have been filed) there have occurred in Bellevue Hospital 56,597 deaths. Of these, autopsies have been performed in 8,395, a proportion of one in 6.7. During the past five years (the years in which the clinical data were gathered) there were 17,818 deaths with 2,673 autopsies, a proportion of one in 6.7—a rather striking uniformity. These figures seem to establish that in Bellevue Hospital over somewhat extended periods of time the ratio of autopsy to death is fairly uniform and constant.

Of the 8,395 autopsied in eighteen years, 208 were found to have lung abscess, a proportion of 1 in 40. During the past five years in the 2,673 that came to the postmortem table 86 had lung abscess, a proportion of 1 in 31. Of these 86, five died of abscess following tonsillectomy, a condition not prevailing in the earlier years of these statistics, reducing our proportion to about 1 in 33. It is also to be remembered that these past five years were the years of the influenza epidemic, with the frequent occurrence of lung abscess. Possibly, too, lung abscess is becoming more frequent.

It is a fair estimate, however, that in every forty cases coming to autopsy, one will have a lung abscess; in other words, in every forty deaths, one lung abscess will be found. In the past five years, as above stated, there occurred 17,818 deaths, and as above reckoned (1 in 40) there must have been 445 deaths with lung abscess.

DEATHS FROM LUNG ABSCESS

Viewed from another angle, the ratio of autopsy to death being 1 to 6.7 and there having been 86 autopsies with lung abscess there must have occurred 86×6.7, or 575 deaths with lung abscess, during these five years. From these statistical manipulations it is deduced that during this five year period there were from 445 to 575 deaths with occurrence of lung abscess. Of course this is only an approximation.

There were recognized clinically during this five year period sixty-seven patients dying with lung abscess, a rather striking discrepancy. Many of these unrecognized abscesses occurred during the course of a pneumonia or infective endocarditis or sepsis, death being due to the primary disease and obscuring the lung abscess; in others, the abscesses were small, giving few physical signs and were overlooked, and in still others incorrect diagnoses were made. While statistics may mislead, it seems a fair inference that lung abscess is of quite frequent occurrence, that it is not an unfrequent cause of death, and that it is sometimes overlooked.

ETIOLOGICAL FACTORS

In the Bellevue cases (I refer now to the postmortem cases) bronchopneumonia was the commonest etiological factor, causing 44 of the 208 cases, about twenty-one per cent. Lobar pneumonia came next, then followed general sepsis, and acute infective endocarditis, in the order of frequency. Many conditions, then, are found associated, such as aortic aneurysm, cancer of the esophagus, and epithelioma of the tongue. Operations for hernia, mastoiditis, bone necrosis and extraction of teeth also were causes of lung abscess. None was recorded as due to a foreign body. In the past five years tonsillectomy was the cause of lung abscess in eleven patients, five of whom died.

PATHOLOGY

When one considers the pathological picture of bronchopneumonia, it is readily understood why it is such a frequent cause of abscess. Bronchopneumonia *is* an abscess, minus the death and liquefaction of the tissue. There is a dense infiltration of the bronchial walls and air cells. Their destruction results in the formation of an abscess in place of the pneumonic focus. In croupous pneumonia, the walls of the air vesicles are more or less intact. However, when destruction does occur, an abscess results. In the embolic type, as in infective endocarditis, there is a hemorrhagic zone with a gray liquefying centre. Surrounding this zone on all sides is a barrier of inflammatory tissue, and necrosis occurs frequently in this barrier zone. The liquefied centre gradually becomes larger and finally bursts into a bronchus, discharging its contents. In favorable cases the necrotic tissue separates, fibrosis occurs, resulting in an interstitial pneumonitis, with, in many instances, obliteration of the cavity.

In the cases of lung abscess following tonsillectomy, the manner of lung infection is a matter of some doubt and much dispute. Infection by inhalation is commonly declared to be responsible; others maintain that it is embolic, and occasional reference is made to the lymphatic route. The inhalationists, prominent among whom, strange to say, are the anesthetists, believe that faulty anesthesia plays a prominent part. Motor driven apparatus, improper suctioning of blood from the throat during operation, operating in the erect position, etc., are variously condemned.

Too profound anesthesia abolishes the cough or bechic reflex of the larynx, thus removing the laryngeal sentinel, and blood or bacteria laden cheesy particles from the tonsil are drawn into the lung. The frequency of these abscesses in the lower lobes, particularly the right, the regions in which aspirated foreign bodies most frequently locate, is additional evidence to substantiate their view. In rebuttal it is pointed out that it is very difficult, experimentally, to produce lung infection by insufflation methods; that lung embolism is most frequent in the lower lobes, particularly the right; that in not a few cases lung abscess has occurred after operation with local anesthesia, and these plainly are not by inhalation; that since tonsillectomy is followed by embolic abscess in the brain, why not in the lung?

It was referred to previously that lung abscess following tonsillectomy was first reported in 1912. It cannot be that these abscesses did occur before 1912 but were unrecognized. That seems impossible. Possibly they did occur but their causal relation to tonsillectomy was not apprehended, and that seems improbable. During the past ten years, the giving of anesthesia has become a specialty and marked improvement in its administration has resulted. Suction apparatus for the removal of blood and particles from the throat is constantly used. Formerly it was not. With all these safeguards it seems strange that lung abscess is increasing.

A point which seems to have been largely overlooked is that it was about 1912 that the operation

of beheading tonsils was succeeded by the one of enucleation. The essential difference pertinent to this discussion is that the enucleation operation lay open venous sinuses and lymphatic spaces in an infected area. The peritonsillar veins, forming a considerable plexus, lie in the wall of the tonsillar sinus, external to the tonsil and separated from it by the superior constrictor and the buccopharyngeal fascia. The constrictor muscle is delicate. Adhesions to the base of the tonsil are frequent, particularly after peritonsillar inflammation, and the enucleation operation may cause tearing of the fascia and injury of the venous plexus. It also brings an infected area into immediate contact with veins whose walls have been subjected to trauma, dangers not so imminent in the operation of tonsillotomy. The creation of infected thrombi follows, which later find lodgement, as infected emboli, in the lung.

Cutler and Hunt, of the Peter Bent Brigham Hospital, Boston, in a careful review of their postoperative pneumonia cases, conclude that practically all are embolic. From the evidence presented it seems that infection by the embolic route is as probable as by inhalation.

In a case studied recently in the Bellevue wards, the onset of symptoms was four weeks subsequent to the operation. This plainly is not embolic, nor does it seem probable that it was from aspirated material. It is more likely that it was a lymphatic infection, the course being from the superior cervical, to the inferior cervical, to the bronchial nodes, and thence to the hilus of the lung, and this abscess was situated around the hilus. It is of course recognized that the infection in its progress from the bronchial nodes to the hilus is traveling against the lymph stream, the normal flow being from the lung to the gland. Hilus tuberculosis associated with bronchial and cervical gland tuberculosis is quite generally accepted as having been from the glands to the hilus of the lung, and numerous other infections, elsewhere in the body, are explained by the transference of infection against the stream in either lymphatic or vascular system.

It seems probable, then, that lung abscess after tonsillectomy is frequently embolic, and also that it occurs by way of the lymphatics, and that these avenues of infection are made possible by the nature of the operation done in enucleation, viz., the laying open of venous and lymphatic spaces. That the inhalation of infected particles may cause lung abscess is of course not denied. To establish preventive measures, however, the responsible factors must be properly apportioned and to this end medical endeavor might be advantageously applied.

It may be well to speak here of a condition which clinically may closely resemble a lung abscess, but which pathologically is quite dissimilar. I refer to an interlobar empyema. A collection of pus, varying in amount from several ounces to a pint or more, may accumulate between the lobes as a sequel to pneumonia or as the result of embolism, causes which operate in producing a lung abscess. This pus may rupture into a bronchus and be discharged or break into the lateral plural space giving a lateral empyema. The situation, physical signs and x ray findings help to distinguish it. It is a more favorable condition than lung abscess, spontaneous cure frequently resulting. It is more amenable to surgery, also, than abscess.

DIAGNOSIS

First.—In pneumonia, failure to resolve promptly, an increase in temperature after it has subsided, the occurrence of late pain in the chest, and the sudden expectoration of a considerable quantity of foul smelling pus, call for the exclusion of lung abscess.

Second.—Pain in the chest following operation on the throat, or elsewhere, should call to mind the possibility of lung embolism and its consequences. The physical examination may reveal only dulness and a few moist râles, or the signs may be those of a pneumonic process. The x ray is an invaluable aid.

Third.—In some of these cases no antecedent causal factor is prominent, the onset being insidious and many of these are thought to be tuberculosis. The character of the sputum and the continued absence of tubercle bacilli serve to differentiate. The details of diagnosis are not within the scope of this paper.

In some, spontaneous cure results. Sloughing off of the necrotic tissue, fibrosis of the inflammatory barrier, referred to above, and in many, obliteration of the cavity occurring. Whittemore reports this favorable outcome in about six to ten per cent. of the cases. On the third medical division this was seen twice in sixty-one cases (3.2 per cent.). After what length of time may one cease to expect a spontaneous cure? Some say eight weeks, others six months. After a year's duration a spontaneous recovery is exceptional. The longer it is deferred, the less likely is it to occur.

Many patients die; mortality statistics give from forty to eighty per cent. of deaths. In the 169 cases studied clinically in Bellevue during the past five years, there were sixty-seven deaths, about forty per cent. The remainder were discharged mostly as unimproved. It will be of interest to note that in one of the fatal cases the lung abscess had existed for eleven years, in another for ten, and in several for five years. When a lung abscess does not terminate fatally, or in spontaneous cure, there ensues a condition of invalidism to which death itself seems preferable.

TREATMENT

Many therapeutic measures in vogue today are but imitations of nature's methods or designed to aid and supplement her reparative processes. An examination of the pathological changes during spontaneous cure may give us a hint for our therapeutic procedure. As stated above, there exists in these cases a barrier ring of exudate with necrotic margins lining the abscess cavity. Separation of the slough, followed by fibrosis, is the curative process. This necrotic rim is continually bathed in pus, containing liquefying ferments (from the bacteria and pus cells) which ferments attack the surrounding barrier making it more vulnerable and liable to death, thus promoting the extension of the necrotic area. Freeing the region from pus and keeping it free are the indications then to limit the amount of necrosis. Nature provides an exit by rupturing into a bronchus, and her expelling force is cough. Fibrosis is promoted by securing rest for the inflamed area. Air entering the cavity with each inspiration keeps this region in almost constant motion. The respiratory act as a

whole adds to the movement, and cough, nature's method of expelling pus, but exaggerates it. A lung abscess places nature's reparative processes in a serious dilemma. To secure freedom from pus, cough is necessary; to obtain fibrosis, rest. It is small wonder that failure is frequent.

From what has been said it is readily apparent that the indications are to free and keep free of pus the abscess area, to collapse the cavity and prevent air currents from distending its walls, and to limit as much as possible the respiratory excursion.

A priori, at least, artificial pneumothorax meets these requirements. The existence of pleural adhesions of any marked degree of density will preclude the possibility of collapsing the lung and obliterating the cavity. To be effectual, the compression must be done before the adhesions have become firm. Tewksbury, one of the first to recommend this, reports eighty per cent. of recoveries in cases compressed within six weeks of the onset. Rich, of Detroit, reports similar results. Clendenning and others advocate its use. If the abscess does not communicate with a bronchus, compression seems inadvisable. If the abscess is situated close to the periphery of the lung, only a narrow strip of tissue intervening, compression may cause a rupture into the pleural space, and is probably inadvisable. An abscess around the hilus, most inaccessible to the surgeon, seems the one for which compression is best suited. Unless curing spontaneously within three to four weeks, compression should be attempted, and if sufficient collapse is secured, must be persevered in for a considerable period. If there is failure in obtaining a cure the lung should be allowed to reexpand, when the pleural surfaces will become adherent, obliterating the pleural space, thus admirably preparing the site for what seems the next rational proceeding, viz., rib resection and the formation of a lung fistula. In this method drainage is obtained and rest for the lung secured, and the requirements for healing, as set forth above, have been met.

Placing the patient head downwards, so that the pus may gravitate from the abscess region, is advocated by some. When it is remembered that a patient can maintain this posture for a very few minutes, it is difficult to believe that adequate drainage can thus be secured. While, in our experience, symptoms may be ameliorated, it was not in any sense curative.

The bronchoscope has been warmly heralded both as a diagnostic and a therapeutic measure. If the abscess has not opened into a bronchus, the bronchoscope is of little value. If rupture into a bronchus has occurred, the bronchoscope as a diagnostic aid is superfluous. The x ray is more informative, and without risk.

It is to be remembered that a lung abscess is not only a collection of pus, but also very frequently a collection of pus with surrounding necrotic lung. The occasional removal of pus through bronchoscopic washings can have but little effect on this necrotic tissue. Cure is achieved when this necrotic sequestrum separates, and a lung abscess curing under bronchoscopic washings, would have cured spontaneously. Some of our cases had as many as fifteen to eighteen washings, with an aggravation of their symptoms. In the case of a foreign body abscess, the bronchoscope is of decided value both diagnostically and therapeutically.

Finally, there is lobectomy. At present this field is properly restricted to a few daring pioneers. For the majority it is inadvisable.

CONCLUSIONS

1. Lung abscess is of more frequent occurrence than is commonly held or stated.
2. Its clinical recognition is not always easy and the condition is often overlooked.
3. Spontaneous cure occurs in a small percentage of cases.
4. Lung abscess has a high mortality rate, forty to eighty per cent, and when not resulting fatally, there frequently ensues a pitiable state of invalidism.
5. Lung compression, if done early, holds some promise; if done late, very little.
6. Tonsillectomy by opening up venous sinuses in an infected area provides the opportunity for embolic invesion of the lung.
7. Finally, a condition so frequent and so serious is deserving of intensive study both for its prevention and its cure.

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Urobilinuria

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Urobilinuria is a term which expresses that an abnormal amount of urobilin is being excreted in the urine. Its significance is by no means definitely understood, although considerable research has been done and various theories propounded in an attempt to elucidate the clinical and biochemical relationships of urobilin and its precursor urobilinogen.

Urobilin is one of the better known of the urinary pigments, although normally it contributes but little toward the actual pigmentation of the urine. It was described first in 1868 by Jaffè (1). Several explanations have been suggested regarding the mechanism of formation of urobilin but probably the most commonly accepted one has been the socalled enterohepatic theory. From the iron and certain other elements of the food is built up hemoglobin. In the liver the hemoglobin is broken down again, undergoing dissociation into its protein and chromogenic constituents. The latter loses its iron and is converted into the bile pigment bilirubin. In the intestine, the bilirubin is reduced to urobilinogen, presumably as the result of bacterial activities. A great

part of the urobilinogen leaves the intestine with the stools, being called stercobilin; while a small part is absorbed into the blood stream and escapes by way of the kidneys.

This is the explanation which is given by most textbooks of physiology, but recent work would remind us that the history of urobilin is not so simple as that just described. Indeed, a review of the literature on the subject leads one into a confusion of conflicting opinion from which it is difficult to emerge with a satisfactory working hypothesis, having regard for all the evidence put forward. Addis (2) believes that after absorption, the urobilinogen is converted into a form which has not yet been identified, the socalled urobilincomplex. This urobilin complex is practically all taken up by the liver where part of it is built up again into hemoglobin. A part gets past the liver into the general circulation and is excreted by the kidneys as urobilinogen. Some may also be reexcreted into the intestine along with the bile.

A LIVER PRODUCT

Wilbur and Addis (3) intimate that urobilin may be a product of the liver itself. Jones (4) also maintains an intrahepatic origin for urobilin. This claim is based on the examination of the duodenal contents following the liberation of hemoglobin into the general circulation. There is an increase in the excretion of bilirubin followed after a relatively short interval by an increase in urobilinogen values. This time interval is believed to be too short to allow of intestinal action upon the bilirubin and subsequent reabsorption of urobilinogen, since bacterial action is not marked in the upper part of the small intestine. Whipple (5) also attributes urobilinogenesis as a function of the liver and bile passages with its absorption at times into the blood stream and subsequent appearance in the urine. This investigator discredits any absorption of urobilinogen from the intestine.

Even though differences of opinion do exist as to the exact site of origin of urobilin, this much is certain that a close relationship does exist between the blood pigment, the bile pigment and the urinary pigment, urobilin.

Bauman (6) has pointed out this relationship by a comparison of their formulas and it is observed that the greatest degrees of urobilinuria occur in those conditions associated with excessive haemolysis, either experimental or clinical.

MECHANISM OF BILE FORMATION

The mechanism of bile formation is yet but vaguely understood. Recent studies have proved that this substance may be formed without the intervention of the liver at all, following the introduction of hemoglobin into the circulation (7, 8, 9). The possibility suggests itself that urobilin may on occasion have an origin apart from either the liver or intestine. As a matter of fact urobilinuria has been observed to follow intra cranial hemorrhages (10), retrouterine hematocele and extrauterine pregnancy (11).

Urobilin occurs in small quantities in the urine of normal persons. In the blood, there is very little evidence of urobilin or urobilinogen having been identified as such. Bauman (6) was unable to demonstrate it in the serum of patients even when they were excreting considerable quantities in the urine. Herzfeld (12) found traces of urobilin in only seven out of four hundred specimens of blood serum examined by the zinc acetate fluorescence technique.

Several methods have been described for the quantitative estimation of urobilin in the urine (3, 13) all depending upon some characteristic property possessed by this pigment substance. A convenient but perhaps not the most accurate method quantitatively, is that devised by Marcussen and Hansen (14). It is an application of the Schlesinger reaction which depends upon the fact that urobilin, in the presence of certain zinc salts produces a green fluorescence. The urine is put through a series of dilutions and the greatest dilution which shows fluorescence is noted. Normally fluorescence is not obtained in a dilution greater than one in twenty but in certain pathological conditions it may be obtained with quite high dilutions even up to one in two hundred. A similar technic has been used by Adler (15) and Herzfeld (12).

ELIMINATION OF UROBILIN

The greatest elimination of urobilin occurs in those conditions associated with an excessive blood destruction. The hemolytic anemias give the highest values. Increased urobilin output has been reported in pernicious anemia and malaria (16, 17). Urobilinuria has been observed in various hepatopathies such as cirrhosis of the liver and severe hepatitis also as a result of the liver degenerations accompanying the toxic infections. This is explainable on the ground of the liver playing a rôle in the production of urobilin.

The diagnostic value of urobilin determinations in the urine is apparent from the viewpoint of differentiation between obstructive and hemolytic jaundice. In the absence of increased blood destruction, a urobilinuria may serve as an indication of diminished functional capacity of the liver.

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Malignant Neoplasms: Colloidal and Electrical Phenomena Observed and Their Experimental and Clinical Aspects*

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In the whole realm of science there is without doubt no subject more studied, theorized about, and investigated than the cancer problem. When we look back through the ages and find that this disease was recognized and treated as early as 1500 B. C., and since that time has been the source of extensive theoretical and experimental study, the complexity of our subject is indeed obvious. So many theories and explanations as to the etiology and progress of the disease have been advanced, argued pro and con, that the investigator of the present day is in a quandary as to the most logical field of pursuit. It is likewise clear—that, despite the findings of former workers, we must explore fields yet untrodden, if we hope to advance our knowledge of the cause and treatment of cancer. In view of the countless number of elaborate dissertations on the pathology and physiological chemistry as related to our problem, it is apparent that the answer to the question, What is the cause of cancer? lies beyond the scope of these independent fields of science.

Much credit is due pathologists, chemists, and bacteriologists who have advanced or disproved various theories, and who, through their untiring efforts, have made possible a fairly accurate diagnosis of the disease, but unfortunately only after the disease has run its course and advanced from the state of benignancy to one of malignancy. Likewise, laudable credit is due the clinician or surgeon to whose attention and skill such sufferers are first subjected; who fight along under the greatest difficulties, knowing that in his hands lies the future of this individual, without any adequate treatment to offer but the knife and radiation. If recognized in its socalled premalignant stage, the fight is most probably won, but how many physicians are gifted with such good fortune?

I shall not at this time even mention the various pathological pictures demonstrated in the numerous forms of the disease, nor shall I attempt to review the theories presented in the past, with which you are all more or less acquainted, but for convenience and thorough understanding of the experiments undertaken, I shall review briefly the theory of cell ionization as brought forth by me at an earlier date (1).

Briefly, by the term cell ionization I mean the distribution of positive and negative charges or ions within the individual cell body. When proper balance and distribution of these ions are present, normal metabolism, functioning and life cycle of the cells result, but any disturbance in this balance manifests itself in the various pathological conditions within the body.

Theoretically, and I believe I can now also say experimentally, it seems that an increase in positive ions or a decrease in negative ions within the cell body results in stimulated reproduction, while on the other hand, a decrease in positive ions or an increase in negative ions, I believe to result in an opposite action, i. e., inhibited propagation, resulting eventually in vital passivity, depending upon the intensity and period of action of the exerting negative charges.

Therefore, it can be seen from the foregoing hypothesis, that the cells which comprise our entire bodies are composed of positively and negatively charged portions continually in active motion, which interchange; and their combinations and recombinations produce the various chemical, thermal and electrical changes necessary to carry on the organism, and if this molecular motion is stabilized simultaneously throughout the cell death will result. Without doubt you have already wondered in what way this normal electrochemical distribution of the ions within the cell may be disturbed, and how we can directly associate such a disturbance with the etiology of cancer.

Some time ago, while making a thorough study of the cancer incidence among the lower animals, I was much impressed with the absence of cases reported involving the udder of the cow. At that time, after an exhaustive negative search for a single case, I issued a preliminary report on the immunity of the bovine udder to carcinoma (2). I was equally impressed with the fact that this organ was quite susceptible to tuberculosis, which state of affairs is exactly contrary to that of the human breast. Results of experiments conducted by myself, following the publication of this report, are extremely interesting. Through the elimination of possible factors responsible for this apparent localized immunity of an organ to cancer, it became quite obvious that it was one of an acquired resistance, because if traumatism, lactation and other factors are considered in the etiology of cancer, surely this organ would offer a most fertile field for the development of this disease.

Alexander Garcia, working on a vitamine of resistance in the treatment of tuberculosis, was able to wall off the tuberculous process by the application of such treatment and a section taken from this newly formed defensive tissue so simulated a sarcoma that the differentiation was practically impossible. In this experiment the animals suffering from tuberculosis might be considered cured of this disease by a condition closely resembling cancer but limited and governed in its process. This same vitamine injected into animals bearing the Flexner rat carcinoma, hastened to a marked degree the destructive process of this tumor over the control animals not subjected to treatment.

Now we all know that one individual is rarely the host of these two maladies, tuberculosis and

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cancer, and this, together with the above mentioned conditions may be explained, I think, as follows:

As stated earlier in this paper, I believe the cell to be composed of positively and negatively charged portions or ions in definite ratio, depending upon the organ or part involved, and such portions or ions to be in active motion, thereby allowing the cells to function and to complete their life cycles. The balance of such ions is by no means constant, which ratio establishes the index of resistance of an organ or part to stimulated propagation and the formation of cancer. Now if this theory, which experiments seem to prove true, bears any connection to our problem, and the exciting factor to carcinoma and other malignant new growths is of a positive nature, then any part exposed to traumatism and constant irritation, generation after generation, acquires a balance of its ions, with the ratio of the positive and negative ions much different than one little exposed to traumatism and positive stimulation and are therefore not as susceptible to the action of a positive stimulus. Here their index of resistance has been raised to offset much stimulations.

Upon this reasoning it is easily seen how the udder of the cow, through natural environment, due to its position, which is one continually exposed to friction between the hind limbs; its frequent periods of lactation, which have appropriately termed it a "milk machine," have established a resistance unaffected by positive stimulation such as would produce cancer of mammary origin in other species.

Regarding the action of the previously referred to vitamine of resistance, it is quite apparent in my estimation, that it exerts an electropositive action upon the cells with subsequent stimulated cell propagation. I shall state at this point that this theory may oppose in some respects the prevailing ideas held regarding the action of x ray and radium therapy in the treatment of malignant neoplasms, but upon careful consideration and study of results obtained in the past, and applied to the various theories and treatment of earlier investigators, I feel that the explanation herewith presented demonstrates an alterative rather than a destructive process brought about within the cell.

We are all familiar with the fact that histologically an individual cancer cell cannot be differentiated from a normal cell, and that the predominant property of such malignant cells is that of propagation and subsequent infiltration. Likewise, living matter is differentiated from that which is lifeless by the property of the former to reproduce, a property which is not possessed by the latter. Applying these known facts of oncology and biology to our problem it is reasonable to believe that whatever this factor is which endows the formerly normal cells with excessive proliferative powers, it must be one of stimulation rather than destructive; *surely dead cells cannot reproduce.*

We also know that all impulses, whether voluntary or involuntary, are the result of electrical conductivity, and with this knowledge it is reasonable to believe that whatever governs the metabolism of the individual cells must also be of an electrical nature, and that all properties of the cells, including that of division, do not occur in the regular, well defined schemes without direct stimulus and control.

As stated before, it is my contention that carcinoma is due to the effect of an excess of positive charges or ions within the cell nucleus, which overbalance of positive charges, whether due to the direct exposure to the positive rays from the röntgen tube or the alpha particles of radium (both of which are at the present time carefully screened off); or to an altered neuroelectrical cellular control, caused by chronic irritation or traumatism, will stimulate the cell to the various chemical and pathological characteristics and processes demonstrated during the development and course of cancer.

If this explanation is true, we could expect to find in metastatic growths the material for our investigation, because here we have the cells from the primary site actually giving rise to new growth, which cells must be endowed with the property and power which gave rise to the original tumor.

Therefore, the first step taken in support of this suggestion was to determine, if possible, whether or not the cells comprising a carcinoma were of different electrical reactivity from those of normal tissue. So complex is such an investigation that I shall limit the following brief résumé of my experiments to this particular subject, although numerous collateral points are being investigated.

The first step in such an investigation was how to determine this overbalance of positive charges or ions within the cells comprising a carcinoma, and this constituted the first few weeks of our research.

Through the courtesy and generosity of Dr. William H. Woglom, assistant director of the Crocker Laboratory of New York City, I was able to establish the Flexner-Jobling rat adenocarcinoma in our laboratory, which tumor was used for all of the following experiments and verified by pathological examination. On the night of January 17th, while working alone in the laboratory I made a rational and most fortunate experiment, using a type H. S., reflecting, Leeds and Northrup galvanometer to determine the polarity of normal and tumor cells.

Taking two female rats of the same litter, of known age and strain, one which I knew to be free from any pathological condition and the other bearing the Flexner-Jobling adenocarcinoma, I connected these much in the same manner as one would connect two batteries by means of a twenty gauge platinum wire. One end I introduced subcutaneously into the normal rat, the other end into the healthy border of the tumor, free from necrotic matter. Then taking two pieces of fine copper wire, to which were fastened a platinum electrode, I inserted each electrode into a different portion of each animal. In the case of the tumor animal, the electrode was placed into the opposite border of the tumor from the wire connecting the two animals. The other end of the copper wires were fastened to the binding posts of the galvanometer in such a manner that the wire from the tumor animal was fastened to the right hand binding post of the galvanometer, and that from the normal rat to the left hand binding post. By pressing a single contact key which had been inserted into the circuit I received a deflection of the galvanometer mirror to the right over a very readable distance on the galvanometer scale. If my contention was correct, the animal

bearing the tumor should act as the positive pole and the normal rat as the negative. To determine the correctness of this polarity, I connected the electrodes in exactly the same order to the known poles of a standard cell, which, upon completing the circuit, deflected the galvanometer mirror in the same direction as did the animals, but to a much more marked degree. By reversing the electrodes in the animals or at the binding posts of the galvanometer or by means of reversing switches, deflection in the opposite direction was brought about. This experiment has been repeated some one hundred and fifty times, and with but one exception, where explicable conditions interfered, has always displayed the same results, even though the animals are separated by a distance of ten feet.

Some of the experiments described above were witnessed by Mr. Otto Borman, a well known radio authority, who suggested that further investigation as to the nature of the results obtained might be carried out with the use of a vacuum tube such as that used in radio reception. He conceived an arrangement of apparatus whereby the characteristics of this tube might be studied, and the apparatus supplied to the experiments mentioned above.

The action of this tube is such that when the filament is lighted and a voltage impressed upon the plate an electron flow takes place between the filament and the plate. Inserted between the filament and the plate is a wire grid. When the grid is given a positive or negative charge a change takes place in the electron flow. The electron flow, as shown by the deflection of the galvanometer mirror, is constant when the grid does not contain an electric charge and deflection of the mirror varies with the kind of charge and also with its intensity. As sufficient time has not elapsed since this extensive experiment was started accumulated data as to my results is not yet available.

The possibility of the interference of thermal changes and the degree of anesthesia has been eliminated by experiment. Therefore, due to the great number of times this experiment has been repeated, and the uniformity of the results obtained, I feel that I am justified in saying that the tumor bearing animals have a higher or greater potential than the normal rats, which change in potential is due to an excess of positive charges or ions within the cells comprising the neoplasm.

Realizing the difficulties involved in the solution and explanation of a subject so complex as the one with which we are dealing, I have merely attempted to offer the most logical explanation as brought to my mind by the results I have obtained in my research, and reserve the right to alter or modify such explanations as further experimentation and research deem necessary.

The determination of polarity being fairly well established, the next logical procedure was to repeat such experiments substituting the anionic and the cathonic colloids for the normal and tumor rats, respectively. I shall not repeat the procedure of the experiments, as I feel that it is sufficient to state that, using a strong electropositive colloid of iron and an electronegative colloidal sulphur, the deflections were the same as with the normal and tumor animals. Such experiments were subjected to the same close observation as were my animal experiments.

The most striking feature observed was the fact that when these oppositely charged colloidal sols were placed in separate, alkali free glass containers, and a wire from each independently connected with the binding posts of the galvanometer, they produced no deflection of the galvanometer mirror until a wire connecting the two was inserted into the sols. Placing the two electrodes into the same sol we found might deflect the mirror in either direction; however, in the great majority of cases, an anionic colloid caused deflection to the left and a cathonic colloid to the right. This last mentioned phenomenon can only be accounted for by the fact that colloids, whether anionic or cathonic, are composed of positive and negative charges or ions, the predominating ones determining the classification of the colloid, and under these conditions the almost constant results obtained with single colloids might be explained.

From two opposite colloids, connected in the same manner as the animals, and the circuit closed, I received a maximum deflection, which, in course of time reached the zero point on the galvanometer scale. Dark field examination of the colloidal sols before the experiment displayed active Brownian movement of the colloidal particles, but when examined after the galvanometer reading had reached the zero point, practically all Brownian movement had ceased and the particles showed marked grouping of agglutination.

Having observed the electrical behavior of normal and tumor rats, anionic and cathonic colloids, the next step was to determine the effects of these colloids upon tumors. Animals connected as previously mentioned and displaying the regular electrical action, i. e., causing deflection of the galvanometer mirror to the right, were treated as follows: Usually 0.5 c.c. of colloidal sulphur sol (negatively charged passing to the positive pole) was injected subcutaneously or directly into the tumor. The animal was allowed to rest for several hours or over night, thus allowing time for absorption of the colloid to take place. After this time had elapsed the same two animals were connected as before and upon completing the circuit deflected the galvanometer mirror in the opposite field. This experiment apparently showed that the cells (tumor cells) previously with a greater potential now possessed a lesser one than the normal animal, i. e., that the positive charges or ions within the normal animal were in excess of those of the treated animal. These animals, allowed to go for several days without treatment, again caused the characteristic deflection as before treatment but not to so great an extent.

I might go on mentioning the many experiments which I am conducting through the kindness of the Philadelphia College of Pharmacy and Science, in their laboratories, also those necessary to place such an extensive and involved work upon an indisputable scientific foundation, but as I wish to say just a word regarding the clinical investigation in support of this theory, I will limit such experimental study to the above mentioned research.

Regarding the clinical use of the anionic colloids, particularly colloidal sulphur, due to its nontoxic properties and the fact that it is the most

powerful electronegative colloid now at our disposal, all that I feel justified in saying is, that a number of cases under such treatment have shown a marked improvement to date. Whether or not this improvement proves to be a permanent one requires a much extended period of time to determine.

Although I could cite a great many interesting cases, and conditions manifested in cases under treatment, I feel that this information could best be obtained from those who have so kindly cooperated in this investigation by their clinical experience and knowledge.

CONCLUSION

In concluding, I wish to state that my experiments all tend to prove that the tumor cells possess a higher potential probably due to the existence of an excess of positive particles, charges or ions, which experimental work is apparently clinically supported by the marked improvement in many cases treated with the electronegative colloids, which I believe bring about a neutralization of such excessive positive ions and readjust the tumor cells to normal metabolism and habit chemistry. Such a process is one of rehabilitation rather than destruction.

Although our results obtained by the application and administration of the anionic colloids in the treatment of malignant neoplasms are very encouraging and the end to which we may look for a beneficial and scientific treatment of such growths, I feel that our present preparations, although scientifically made to the best of our present day knowledge of colloidal chemistry, are in need of extensive research and improvement.

I wish to take this opportunity to express my hearty thanks and appreciation to all who have so ably assisted in this research and most sincerely hope that this work may mean one more step forward in combating one of the gravest maladies known to mankind, cancer.

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Granuloma Inguinale*

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INTRODUCTION

Considerable discussion had been evoked of late regarding the subject of granuloma inguinale. Not recognized in the past as a definite clinical entity, this ulcerating cicatrizing, serpiginous lesion of the pudenda and mucous membrane has been a confusing condition to clinical men; and up to fairly recent times has been a stumbling block in the pathway of successful therapy. Careful scientific work under ideal conditions in various portions of the world, particularly in the tropics, has gradually established the fact that these socalled tropical ulcers described under a great variety of names have a definite entity, a definite clinical resemblance, and that they can be fairly successfully combated. Case reports of this hitherto considered rare lesion have been accumulating in the literature and there is a striking uniformity in many of the clinical descriptions of this disease process.

We are indebted to Conyers and Daniels (1) for the establishment of this condition as a clinical entity, removing it from that vague and meaningless term, tropical ulcer. Since then a great number of men have reported this condition in the literature, described it in scientific detail, and presented a new mode of successful treatment. Among the men may be mentioned Campbell (2), Goodman (3), Lynch (4), and Cumming (5). With this advance in knowledge of the condition proper, there has developed a marked advance in the number of reported cases and particularly a marked advance in our knowledge of eradicating it. The horizon no longer reveals that hopeless, indifferent outlook to these chronic, indolent, progressive and not uncommon lesions.

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ETIOLOGY

The disease is common in the period of sexual maturity—children rarely acquire the disease nor individuals above the age of forty-five. Both males and females are effected; race plays no essential causative part, although a few believe that the negro race has a greater susceptibility.

The immediate exciting factor is not definitely known—there is a theory advanced by Wise (6) as to the responsible agent being of a spirochetal origin. Donovan (7) suggested the socalled Donovan bodies or inclusions as playing the causative rôle. The views of Donovan have apparently been given rather wide acceptance; he describes small rod or coccuslike bodies usually about four microns by one micron in size, lying singly or in groups in the mononuclear cells, obtained by scraping the ulcerative areas, the organisms taking the gram stain. Few investigators have confirmed these findings, but these socalled inclusion bodies have been noted at times to be completely absent from typical lesions.

HISTOPATHOLOGY

The histopathology is essentially a chronic, low grade inflammatory process with a concomitant exuberance of granulating tissue. There is a round cell infiltration of the corium and of the papillæ, and

also to variable extent down to the subcutaneous tissue. The hypertrophied papillæ so commonly seen is due to the cellular infiltration.

The diagnosis of this lesion up to a comparatively recent time was confused with syphilis, yaws, tuberculosis and epithelioma; probably because of our habit of credulity. The lesion as it appears clinically is distinctive by its chronicity and the light red, shiny mass of granulating tissue that bleeds easily and exudes a thin, light, sanguineous fluid with almost a pathognomonic fetid odor. The margins of the lesions are raised and the centre sunken. With this more or less extensive lesion there is no enlargement of the draining lymph nodes and the general well being of the patient unaltered.

This condition is differentiated from a primary by the history of chronicity and the absence of lymphatic involvement; from condylomata lata by the presence of granulating tissue. The Wassermann is of some help. The distribution and the lack of the multiplicity of the lesions distinguishes it from yaws. The absence of Koch's bacillus rules out tuberculosis of the skin. The microscopic section rules out neoplasms.

The treatment of granuloma inguinale at present is specific, consisting of intravenous injections of one per cent tartar emetic (Campbell). Some workers, in conjunction with intravenous therapy, have administered tartar emetic by other routes such as intramuscularly (Cumming) and orally (Goodman).

The mode of treatment in the case herein reported was that of intravenous medication. Five grams of antimony potassium tartrate was dissolved in distilled water. This solution was then filtered through a Berkefeld filter and acidulated with five drops of chemically pure hydrochloric acid. The solution was then ready for intravenous use which was accomplished with a ten c. c. syringe. The first injection given was two c. c. of the one per cent solution of tartar emetic diluted with eight c. c. distilled water. Every other day the solution was increased by one c. c. and the distilled water decreased by one c. c. and thus this was continued until twelve c. c. of one per cent solution was given with no reaction nor any discomfort to the patient. However, the patient felt an itching sensation in the ulcerative area. In passing, I might mention that on several occasions by some fallacy in technic a small amount of the solution escaped into the subcutaneous tissue which produced a burning sensation almost immediately and later produced an indurated area at the site, but with no untoward effects.

Case.—Patient, C. G., male, white, adult, about forty-nine years of age, from Elizabeth, Ky., entered Louisville City Hospital, August 24, 1922, with a provisional diagnosis of anal fistula and with the following complaints: Ulceration on right cheek of buttocks extending down along the folds of buttocks and up to the base of the scrotum and around the inner surface of both thighs up over the pubis (three inches) and over both inguinal regions. This according to patient's history began as a boil between folds of the buttocks about four years ago. The boil broke down and began spreading progressively.

At time of entrance to the City Hospital the lesion appeared to be superficial with a raised border of an exuberance of granulation tissue which was hard and made up of numerous reddish brown elevations the size of a pea. The centre of the lesion was smooth and reddish blue in color with a yellowish, purulent, fetid discharge bathing it. Patient asserted that it would itch during the night only. Areas, apparently healed, were present having a tissue paper appearance, pinkish in color, and a brownish, nonelevated border.

The family history was negative. The patient had had typhoid fever when ten years of age, whooping cough and measles during childhood G. C. and chancre denied. He smoked and drank moderately. He had no vertigo or headache, heard and saw well, had palpitation of heart at times, but no dyspnea and no cough. The bowels were usually constipated; no dysuria or nocturia.

Physical examination revealed extensive ulceration. Pupils were equal and regular and reacted to light and accommodation. Teeth were in poor condition; no adenopathy of neck; heart and lungs revealed no pathology; no tenderness nor involuntary rigidity of abdomen; no palpable inguinal adenopathy.

Laboratory findings: Urine: specific gravity, 1.020; negative for albumin, sugar and casts. Blood count, white blood corpuscles, 6,800; polymorphonuclears, 45 per cent; lymphocytes, 46 per cent.; transitionals 8 per cent. eosinophiles, 1 per cent. Wassermann was negative. Smear revealed pus cells, gram positive cocci, pairs and singly; no evidence of Koch's bacillus. Microscopic section showed acute and chronic inflammation, no evidence of tumor.

CONCLUSION

The treatment previously described was continued for a period of seven months and definite clinical improvement was observed. In many places the ulceration healed over entirely. In other places the lesion became superficial and numerous white, raised areas of epithelization appeared; the fetid odor and discharge became markedly lessened. The progress was extremely satisfactory to the patient. In the latter part of March, 1923, the patient decided to leave the hospital, feeling that his condition had improved to that extent.

Appreciation is shown to Dr. William J. Young and Dr. John Walker Moore for verification and advice.

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Practical Therapeutics

CALCIUM INHALATIONS IN THE TREATMENT OF PULMONARY TUBERCULOSIS*

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It seems strange that no practical use has been made of a condition first noticed by a French physician, Renon, in 1906, and a little later, in 1909, by a Spanish physician, Fisac, viz., that all men employed in lime or plaster of Paris works were immune to tuberculosis. Thousands of men are employed in this industry, year in and year out, and as yet no cases of tuberculosis have been reported among them. Is it not then reasonable to suppose that this immunity is brought about by the inhalations of the dust of lime and plaster of Paris in these factories? It is inconceivable that it could be due to any other cause, for the calcium dust is the common factor in all the localities where this immunity has been observed. It is but a step further to conclude that calcium is a specific in tuberculosis, and as we have lamentably few specifics in medicine, it should be our aim to add to them.

I pointed out in a former paper (1), that pulmonary tuberculosis, bearing in mind the anatomy of the lungs, can be treated only in two ways, namely, by inhalations or by intravenous injections, whereby the medication will reach every part of the lungs. By inhalations the fine particles of calcium oxide or calcium sulphate penetrate to the remotest parts and there set up an alkaline antiseptic reaction with the moist tissues, which tends to overcome the acidosis nearly always present. The constant associated deficiency of calcium is thus also corrected. It would be difficult to imagine a more ideal method of administering treatment.

Every conceivable remedy has been tried in pulmonary tuberculosis without any logical reason. Here, however, we know that all men who inhale lime or gypsum are free from tuberculosis, and it is only fair to the many sufferers from this disease that we should give it a trial. I apologize for the small number of cases I am about to report, but I can not get facilities for trying out this treatment on a large scale at some hospital. I am sure I have tried.

CASE REPORTS

Case I.—In July, 1919, the patient, a woman, came to me. She had been sick for about five years and had small cavities in both apices, as well as râles in every part of the chest. I treated her with inhalations of sulphur dioxide and she improved up to a certain point, i. e., her temperature stayed normal and all râles had disappeared, but the pulse rarely went below 100, her appetite was waning, she was losing weight, although she had put on flesh when she began treatment, and she still felt short of breath after exertion. I realized then that the action of sulphur dioxide was purely antiseptic, and its reaction decidedly acid. Some other remedy was needed to overcome the acidosis and replace the loss of calcium. Nothing could be better suited for this purpose than inhalations of calcium oxide or calcium sulphate. A few months previously I had investigated conditions in lime and gypsum plants in the northeastern part of the United States, as well as most parts of Canada, and learned that not a single case of tuberculosis had been observed among the men employed in these plants. Furthermore, some of the managers noticed that men suffering from coughs and colds when first given employment soon recovered. It is quite possible that a certain percentage of these men were tuberculous. For these reasons I thought it would be advisable to give inhalations of calcium to my patient. I therefore obtained some chemically pure calcium oxide, ground it to powder in a mortar and put it in a powder blower. I asked the patient to use this powder blower for a few minutes three or four times an hour. At the end of twenty-four hours she informed me it was very irritating, that it burnt her mouth and throat. I requested her to discontinue these inhalations and wondered why this treatment had failed. I did not discover the cause till three years later. The pure calcium oxide and the pure calcium sulphate are both very irritating to inhale, because they set up a violent reaction on coming in contact with the moist tissues. The commercial products do not cause any discomfort, because each molecular group has already absorbed two molecules of water from the air.

Case II.—On March 14, 1922, I was called to see a patient, a married woman, Mrs. A. D., of Great Neck, twenty-four years old. She had contracted pulmonary tuberculosis four years previously, when she weighed 130 pounds. She had been bedridden since the previous August, and then weighed 108 pounds. A specialist had seen her in October and told me that at that time she was a hopeless case and might live another three or four months. In appearance she was terribly emaciated, with sunken eyes and cheeks, prominent nose, cheek bones, jaws and ribs, flushed cheeks, very thin arms and legs, etc. During the previous few weeks her temperature had varied between 101° and 104°, the pulse between 120 and 140. There was loss of appetite, constant cough and great prostration. There was a large cavity in the left apex, noticed by everyone in the room, by the bubbling and gurgling sounds whenever the patient breathed. There were signs of a consolidation in the right second interspace near the sternum, and there were râles in every part of the chest, such as you find in all far advanced cases. Her diet consisted of a few glasses of milk, a little orange juice and some soup. During the next few days I gave her two intravenous injections of a calcium solution, that I have been using for the past six years, but she did not show signs of improvement. On March 20th I gave her a powder blower half filled with plaster of Paris and asked her to keep the nozzle about fifteen inches from her mouth and inhale the dust deeply into her lungs for a few

*Read before the Section of Medicine, New York Academy of Medicine, May 15, 1923.

seconds, and to repeat this four or five times an hour during her waking hours.

On April 4th, two weeks later, the râles had greatly diminished everywhere, especially in the lower part of the lungs, and the bubbling and moist râles were fewer. The signs of consolidation in the right interspace had disappeared, in the same manner as I had noted in other cases after inhalations of sulphur dioxide, which I reported over four years ago. Her appetite began to improve, and she was eating chops, steaks, and so forth, together with the usual vegetables. Her highest temperature for the day was 99.4° and her lowest pulse 104.

On April 11th, three weeks after treatment began, she was lifted out of bed and allowed to sit up in a chair. Temperature, highest, 98.6°; pulse, lowest, 100. No one in the room could now hear any moist or bubbling râles when the patient breathed. Using the stethoscope, I found a few moist and many dry râles in the cavity at the left apex. There were some areas in the chest where there were no râles at all, mostly in the lower part. On April 27th, temperature, highest, 98.6°; pulse, lowest, 98, very few râles anywhere; only a few dry rales in the cavity.

On May 8th, temperature, highest, 98.6°; pulse, lowest, 96. The patient now complained of a dry throat and I therefore advised sulphur dioxide inhalations. She took these inhalations mornings and evenings for five minutes. The sulphur dioxide counteracted the dryness and materially assisted in clearing the lungs of decayed tissue. I have reported the action of sulphur dioxide in a previous paper (2), and therefore cannot go into details here. However, during the first few days of its use the patient brought up many gray lumps. Later the color of the sputum changed to yellow and occasionally to white. She was now carried down to the garden at the back of the house where she sat most of the day, occasionally taking a short walk up and down the path. Once she went for an automobile ride for an hour.

On May 20th there were few dry râles in the cavity and few râles at the right apex. Temperature was normal and the lowest pulse was 92. On June 4th, at 4 a. m., she got out of bed suddenly to close a window, because a gust of wind had blown some things off a table. She reached the window and dropped dead, probably from acute dilatation of the heart. She had no hemorrhage. From the progress of this case I have no doubt that her condition would have become arrested. I had repeatedly warned her not to get out of bed unassisted and to avoid any muscular exertion.

Case III.—On October 23, 1922, I saw a married woman, Mrs. H. W., of Little Neck, twenty-two years old, who had lost weight and strength during the past six months, felt tired, had no appetite and did not sleep well. She had a slight cough and occasionally raised yellow sputum, which was not examined. The x ray, taken three months previously, showed peribronchial infiltration of both lungs as well as mottling and haziness of the left apex, suspicious but not positive of tuberculosis. There were no râles. Her temperature was normal but her pulse was 92. She was given a powder blower and instructed how to use it. Three weeks later she came back. She had not coughed for about ten days, had slept well, had a good appetite, had gained three and a half pounds and felt perfectly well. I have not seen her since.

There has always been a great objection to deep breathing in tuberculosis. I could never see any reason for this, for it is better to get good air into every part of the lungs than to leave part of them with stagnant air. The tubercle bacilli find a suitable breeding ground at the apex owing to the stagnant air, but seldom at the base, which is well aired. When you use sulphur dioxide or calcium sulphate inhalations, as I have, you will notice that signs of tuberculosis disappear first at the base, and much later at the apex, which demonstrates conclusively that the base of the lung is better aerated than the apex. Investigators have recently shown that deep breathing in tuberculosis is beneficial. Otabe (3) has demonstrated that deep breathing has a retarding influence on the tuberculosis process.

Leuchtenberger (4) describes the action of calcium as follows: "On the heart it resembles digitalis, it assists in the coagulation of the blood, it diminishes nervous and muscular irritability, it increases the phagocytic action of the leucocytes, it is also antiinflammatory and antiexudative." Decalcification exists in all diseases and conditions in which nutrition is at a low ebb. Lack of calcium means that metabolism is at fault, consequently, food is not being digested and assimilated as it should be, and accounts for loss of appetite in tuberculosis. Given a certain pathological condition of the lungs and having applied thereto a certain chemical reagent, the resultant chemical reaction should invariably be the same, with the exception of idiosyncrasy in a very small percentage of cases.

Bovine tuberculosis also appears to be due to deficiency of calcium. The Ohio Agricultural Experiment Station published reports (5) showing that *without exception* there was loss of calcium in every milch cow, varying from about two to eighteen grams a day. In a group of six cows, the average loss was over fourteen grams a day. It was shown that the cows for some unknown reason were all obliged to draw upon their skeletons in the production of milk. The fact that a milking cow loses calcium at the same time she receives a supply greatly in excess of the amount utilized, shows that the bones are more readily accessible for use in milk production than the calcium of the ration. And I might add that the administration of calcium by mouth to tuberculous patients is equally ineffectual, and like cows, human beings draw upon their bones for the supply of calcium. Milch cows often have disease of the bones as a result of this loss, and tuberculous patients often show decalcification, of the bones as proven by radiographic plates.

Coutière (6) more than a year ago used inhalations. The atmosphere was heated by electricity, saturated with lime and mixed with carbon dioxide in varying proportions. The inhaler was used for five minutes ten to twelve times a day. Signs of disease rapidly subsided, while the strength of the patients increased. Fluoroscopic signs of calcifi-

cation also became apparent. The same treatment was tried independently by another physician, who reported forty per cent. of apparent cures.

This treatment by calcium inhalations is so cheap, so simple and so harmless, and, in my opinion, so efficacious, that I hope no one who is interested will hesitate to give it a trial. As we know, the germs of tuberculosis obtain entrance into the body usually through the lungs, and it is surely not unreasonable to introduce the remedy, which will kill the germs or arrest their growth, through the same channel. The harmful action of destructive gases on the lungs has been widely demonstrated, and I am convinced that there is an equal opportuunity for successful experimentation in the use of inhalations which will have a beneficial effect when correctly used.

COMMENT

Since reading this paper, I tried the commercial lime for inhalations. It should not be used for this purpose, as it is irritating, causing severe coughing, whereas the commercial plaster of Paris does not irritate. I can give no reason for this.

An editorial appeared in the *Journal A. M. A.* on June 2, 1923, entitled: Calcium Therapy in Tuberculosis, which is incorrect and misleading. The first sentence reads: "The resistance to tuberculosis of those who work in lime dust is traditional." The writer then proceeds to give a long dissertation on the uselessness of administering calcium salts by mouth, and calcium chloride subcutaneously and intravenously. In this statement he is perfectly correct, but no mention is made of the fact that workers in lime or gypsum are immune to tuberculosis, because they inhale it—they do not eat it, although they must swallow some of the dust—neither do they have subcutaneous or intravenous injections. The article ends with the emphatic statement: "Certainly there appears to be no scientific basis for their continued utilization," i.e., of calcium compounds.

The plain fact still remains unchallenged, that workers in lime and gypsum do not suffer from tuberculosis—because they inhale calcium.

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THE TREATMENT OF SKIN AND SURGICAL TUBERCULOSIS BY THE X RAYS AND QUARTZ MERCURY LAMP*

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These cases are presented, not because of their rarity, but because they serve as excellent examples of what can be done for a large group of cases usually so difficult to handle both surgically and medically. They tax the patience of both physician and patient to the limit. Those who have attempted to treat skin tuberculosis with ointments, curetting, and cauterization will testify to the fact that the results do not compensate for the effort on the part of the physician and the prolonged suffering of the patient.

Surgical treatment of tuberculous adenitis leaves unsightly scars. Besides, the results are far from perfect, as recurrences are frequent, since surgery alone, no matter how skillfully applied, can not eradicate the disease in its entirety. In joint tuberculosis, the plaster cast aims at an immobile joint and possible ankylosis with the hope of keeping the tubercle bacillus quiescent and thus stop it from causing further destruction. The aim of the combined x ray and quartz mercury lamp treatment is not only to keep the tubercle bacillus quiescent, but to stimulate all the immunizing forces of the body to fight the invader with the hope of its ultimate destruction. The results obtained from the newer method of treatment are arrived at in a much shorter time, are at least as good, if not better, and are the least disfiguring. Rieder says "with a high degree of certainty, we cure at present the socalled surgical tuberculosis of bone, joints, and lymph glands through means other than surgical."

Röntgen rays have been used with good results in the treatment of tuberculosis by Schiff, Holzknecht and many others as early as 1897, but it was after an improved technic in 1910 that such brilliant results were reported in Europe. The first group of cases which were treated with the better technic were reported by Iselin. Out of forty-one cases, twenty-four were cured and the rest markedly improved. In joint tuberculosis, Kohler obtained seventy-three per cent. cures with movable joints and the balance were cures with ankylosis. Stromyer reported thirty-nine cures out of forty-six cases of hip joint and knee tuberculosis. Rieder obtained fifty-two cures in a group of sixty cases.

Gratifying results have been obtained in other forms of tuberculosis. In tuberculous peritonitis the results are good. In those with ascites, aspiration of the fluid before treatment is necessary. In intestinal tuberculosis, especially in early cases, very good results have been reported. Those associated with lung tuberculosis yield poorer results. Even in lung tuberculosis the x rays have a marked healing effect, when the treatment is combined with the ultraviolet light or heliotherapy, and other supportive treatment. In tuberculosis of the bladder, Wetterer cured seven cases and eight out of a total of fifteen were improved. He advocates filling the bladder with protargol solution before the treatment in order to obtain a better deep effect. Schmieden obtained fifty per cent. cures in tuberculosis of the testicles, prostate, and seminal vesicles. In tuberculosis of the kidney, x ray treatment is the only thing to be considered, if both organs are involved. In tuberculosis of one kidney operative measures are to be considered from the viewpoint of preventing a systemic invasion. Even after removal of one kidney, the other kidney and the bladder should receive irradiation, because they may be tuberculous and no harm will result, as neither the kidney nor the bladder epithelium is injured by the therapeutic dose of röntgen rays. It is at present the recognized

*Read at a meeting of the Bronx County Medical Society, October 17, 1923.

method of treatment in all forms of skin tuberculosis, with the exception of lupus planus.

CASE REPORTS

Case I.—The patient, an eight year old boy, was operated upon by Dr. A. A. Berg for a suppurating appendicitis. He was discharged from the hospital before the skin wound was entirely healed. During his stay at home, the wound ulcerated and swellings appeared in each groin. He was readmitted to the hospital on January 20th, about two months after the operation. There was a slight discharge from the wound and its base was covered with whitish, unhealthy granulations. A bluish red, slightly fluctuating mass was present in each groin. They broke down a few days later, discharging a thick yellow pus, each leaving in its place an ulcer, the base of which was grayish and necrotic. There was no attempt at granulation. Two months later, a similar swelling appeared about the outer edge of the right pectoral muscle. This also soon broke down. The patient was emaciated. He was very weak and unable to walk. His weight was fifty-two pounds. His heart and lungs were negative. A small section taken from one of the ulcers revealed the pathological findings of granuloma with necrosis. No tubercle bacilli were found. His blood was negative to the Wassermann test and the wound discharge was negative to sporotrichosis and blastomycosis. Von Pirquet reaction was positive.

A clinical diagnosis of scrofuloderma with tuberculous adenitis was made, regardless of the inability to find the tubercle bacillus and treatment was instituted for that condition. He received one quarter of a skin unit of x rays once a week for the first four weeks. This was alternated with quartz mercury lamp exposures. The whole body was irradiated for from two to five minutes from a distance of fifty centimetres. The character of the lesions soon changed and healthy granulations made their appearance. The patient gained six pounds. He felt much stronger and was able to walk. During the following three months he received only one x ray and three quartz mercury lamp exposures each month, and was discharged cured on July 9, 1923, after making a further gain of five pounds.

Case II.—This patient was a girl, eleven years old. Pain and swelling developed in her right knee about five years ago, and her case was diagnosed as tuberculosis. Perhaps two out of the five years she had had to wear a cast. About a year ago, during one of those intervals when the cast was off, she fell and hurt her knee. It became swollen and gave all signs of fluid in the joint. She was again placed in a plaster cast, which was on for about three months when the patient and those about her began to notice a peculiar, offensive odor. This became so unbearable that the people, of their own accord, removed the cast and a broken down abscess on the inner side of the knee was found. For a long time the family physician attempted to heal the wound by cauterizing it, but failed.

I saw her first on October 1, 1923. She was fairly well nourished and weighed eighty-nine pounds. To all appearances her lungs were negative. She walked with a rigid knee, although it could be slightly flexed by force. It was somewhat painful and there was a certain amount of swelling about the joint. This was in the nature of an infiltration without any fluctuation. There was a sinus at the inner and lower portion of the knee, the edges of which were covered with exuberant granulations.

The patient received one fourth of a dose of hard filtered rays to the front of the knee, followed in three days by a general exposure to the quartz mercury lamp. The same process was repeated the following week. After two weeks the discharge completely ceased, the sinus was covered with a hard adherent crust, and the swelling about the joint was practically gone. She was able to bend her knee to a right angle, without any discomfort. There was complete absence of pain and tenderness. She gained three pounds in that short period.

These surprisingly rapid results were probably due to the fact that the lesions in this case were of the hypertrophic and granulating type, and as that type of tissue is a rapidly growing one, it is very susceptible to the action of the rays.

The rays have no direct action upon the tubercle bacillus. They have, however, a strong influence upon the general economy and on the process of antibody formation. Healing takes place by the destruction of the epithelioid cell and the lymphocyte and by causing an inflammatory reaction around the lesions. Minute fibres are seen to push into the centre from this surrounding zone and, in time, the whole process ends in fibrosis. The dose of rays must be carefully gauged so that the two processes, destruction and stimulation, may take place side by side. This is made possible by the fact that the tuberculous tissue is more susceptible to the rays than the normal fibroblast.

In the treatment of tuberculosis all efforts must be exerted towards the possibility of increasing the fighting power of the system. Therefore, x ray treatment of tuberculosis must be combined with all the other known useful methods of treatment, and a large part of what the x rays lack in efficiency is supplied by the rays of the quartz mercury lamp. These make an ideal combination, if skillfully applied. The two great qualities of the rays of the quartz mercury lamp are their powerful germicidal action and the great tonic effect which they have upon the entire system. Under the influence of this light, hemoglobin gives up its oxygen more readily, thus increasing the oxidizing power of the system. It lowers the rate of respiration and increases its depth. It increases the volume of the heart beat. It is refreshing to the patient. It increases appetite, promotes sleep, and causes an increase in body weight. Its other qualities are the change of oxydase into melanin, it is capable of splitting albumens, fats and sugars in the presence of catalytic agents, and may produce pronounced changes in the spleen.

Whether the rays act by way of the internal secretions of the skin or its action may be attributed to the oxydase and melanin changes, is not yet understood.

The ultraviolet rays of the sun lamp occupy a position in the spectrum midway between visible light and the röntgen rays, the shortest ultraviolet rays overlapping the longest x rays. It is also likely that they overlap in their biological action.

1955 Grand Concourse.

Historical Medicine

A Psychohistorical Study of the Sex Balance in Greek Art*

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(*Continued from page 157*)

Ancient sophistications are shown in that the lawgivers like Minos of Crete claimed that if men sought only women, the lands would soon be overpopulated. Hence it was policy to encourage men to seek one another part of the time. On the other hand, military men contended that if armies were made up of pairs of lovers it would increase bravery, for while a soldier might run away to save himself he could hardly leave his male sweetheart in danger. This is said to have been the composition of the Theban sacred band who fell to a man in the battle of Cheronaea.

Artists recognized the bisexual idea, for they asserted that the most beautiful male figure had something of the feminine and the most beautiful female figure something of the masculine. Minerva, Diana and even some of the Venuses show maleness of contours, while Apollo is almost girlish.

FIG. 13.—Head of the Fanciulla d'Anzio, Musseo Nazionale, Rome. Whether this figure represents a boy of rather effeminate type or a girl of rather boyish character has been much disputed. The flat chest is distinctly male but the "Venus necklace" of the neck is emphatically female.

The only hostility found against homosexuality is limited to one ancient reference to Laios and Chrysippus who were punished by Hera (Juno), the goddess of marriage, for homosexual love; the provision in the laws of Solon which punished slaves who practised homosexuality was death; certain laws against or hostile to male prostitutes who took money, for these were looked upon like female public prostitutes. The genuine homosexual never took money from his male lovers although often he received costly presents. He was supposed always to be a perfectly free agent and to be actuated solely by choice. Nevertheless in the oldest records the man enamored of a boy always kidnapped him, in Crete and perhaps also in Chalcis. This was an echo of the custom of marriage by capture. Apparently it was only a ceremony. The fact that according to the legend Jupiter himself kidnapped the boy Ganymedes seemed to satisfy the Greeks that this character typified the boy object of homosexual love. The alleged kidnapping occurred at or near the town of Chalcis, which was so noted for homosexuality that the verb chacidizein meant to commit pederasty. The word Ganymede became a symbol of the passive rôle in the same act (corrupted in the Middle Ages to catamite). The relationships usually were of several different types as young or older men with boys and youths, or young men of the same age who were of somewhat different temperaments, with each other. The Greeks regarded the friendship of Achilles and Patroclus as homosexual, the latter being the passive partner. When Agamemnon stole a girl away from Achilles he sulked and refused to fight, but when Patroclus fell he was aroused to fight. His language to and about Patroclus struck the Greeks as homosexual. There is no indication that homosexuality was a reciprocal affair; one had a male passion and the other submitted. Most of the poets wrote passionate love odes to beautiful boys and it is said that homosexual love was represented in some of the best dramas, both Aeschylus and Sophocles representing it. We read that Pericles, who was a lofty idealist, repudiated homosexuality. It seemed to be a matter of purely personal sentiment and did not reflect the spirit of the age. It is said that when a fellow officer praised the beauty of some of the boys Pericles told him "a general should have clean eyes."

The fact that the leading conductors of philosophic schools defended homosexuality—men like Isocrates and Parmenides—shows how the public opinion of the day ran.

It is said that Phaedo, whom Plato immortalized, was originally a poor boy prostitute, who having been a war prisoner had according to the custom of the time been sold to the highest bidder for purposes of prostitution. After he had lived this life for a time a friend of Socrates and Plato bought him and set him free. A defense of homosexuality by one of the philosophers of the period was that "some desires are too strong to be resisted."

It appears that the boys who were the object of the passion were of a feminine makeup, but one author states that at a certain age there is little difference between the sexes which could hardly be distinguished save by the clothing. The glance of the eye, the complexion, the smooth face, the voice, etc., were the same in both sexes. It must be remembered that the Greek boys were of exceptional beauty.

Still another explanation of homosexuality by an ancient Greek (Plutarch) blamed the custom on the habits of the day in going naked in the gymnasia. In both sexes most of the bodies were exposed and there was more or less subconscious sex confusion. This is a popular explanation for the practice of homosexuality in prisons and in naval service even to this day, and is an obviously specious explanation.

Some writers such as Symonds[1] considers the subject of Greek inversion from an unusual angle

*Presented before Historical Section, New York Academy of Medicine, November 30, 1923.

[1]Symonds, J. A.: *A Problem in Greek Ethics.*

showing there were two quite separate forms of it at the outset. One was gross and sensual and reached Greece from Phoenicia, appearing first in the islands (Crete, Cyprus). The other was chaste and originated among the North Greeks or Dorians, the most hardy and continent of all the Greeks. In time the chaste form became merged into the other in such manner that it is extremely hard in individual cases to discriminate. The same word paederasty was applied to both forms as it meant simply boy love without necessarily connoting any gross sensuality. That this honorable form had originally been in existence is evident from certain passages reprobating the practices of the Cretans, Corinthians and Lesbians, as well as from the fact that the great attention to the question of personal hygiene by the Dorians, notably the Spartan discipline, would have made a life of sensuality out of the question. The Dorians were notably virile and no trace of any effeminacy is apparent in the boy objects of love. Every heroic figure among the Greeks both in mythology and history had a chum to whom he was devoted and the only way in which these friendships differ from those of the Anglo-Saxons was that one member of the team was the lover and the other the beloved. The Greeks called them the Inspirer and the Hearer. This connoted some superiority on the part of the Lover, who was older or had a higher rank or greater prestige, apparently. The basic idea or background was military life and the basic sentiment a sort of chivalry, this also implying that the Lover was in some way superior to the Beloved. The historical ideal was the friendship of Achilles and Patroclus and the prototype in the mythological world was the kidnapping of Ganymede by Jupiter, said to have been an invention of the Cretans to sanction their own unusual practices. It has been shown that Homer had no conception of any inversion among men; that interpretation of the friendship of the two men was given by Aeschylus and Sophocles.

Honorable boy love played an immense rôle in Greek history because in all political revolutionary movements teamwork of this kind is in evidence. Apparently when two chums devoted to each other conspired to kill a tyrant the plot went through. Of numerous instances of this kind the slaying of Hipparchus by Harmodius and Aristogition was the most famous although only one of a large number. A man could seemingly show a higher degree of fidelity and trustworthiness toward his pal than to any other man or group. If two lovers conspired to do a thing it was usually done. In a few cases when the plot failed both lovers suffered martyrdom; one would never see the other perish alone. The relationship was peculiar in another striking way. One lover always "stood for" the other, and if one was involved in any kind of disgrace his friend was also disgraced, although he had no hand in the offensive act. This must often have proved a restraining influence in life.

As the *Iliad* really rests on the love of Achilles for Patroclus so the other great epic myth of the Greeks, the war of the Seven against Thebes also had its origin in homosexuality. Laios, the father of Œdipus, kidnapped the boy Chrysippus, the son of Pelops, and the feud was thereby inaugurated.

The boy god Eros was the one who inflamed a man with love for a boy, as Aphrodite had charge only of the heterosexual love of man for woman.

After boy love had become corrupt in a high degree and was no longer a good influence it was tolerated despite its gross aspects and did not fall into disrepute until it was found to work in with all kinds of rascality in human dealings. It could be made to facilitate every kind of swindling, lead to feuds and murder, cause lawsuits, etc. Just as in irregular and unusual forms of heterosexuality in our times. Its final passing does not seem, as is generally supposed, to have been due to the advent of Christianity but only to the above factors.

When Athens was at the height of its power boy love had already become a serious problem, for it was necessary for a boy to have a chaperone for several reasons. A free boy was always accompanied by an old and trustworthy slave. He was obliged by custom to look straight ahead or down and anything like "making eyes" at people was frowned upon. Certain establishments he must never be seen in, as barber shops, florists and perfumers. If the boy was alone on the street he would be accosted and solicited. Any boy tempted to take money was ruined in reputation. There was no stigma attached to a costly present from a recognized lover.

Some boy lovers defended their course by drawing an unfavorable parallel between a well bred boy and the average woman who was frivolous and inconstant, ignorant, taken up chiefly with her toilet. The qualities attributed to a good well bred boy were of such high character that it seems to exclude gross lust. Incidentally he was distinguished for personal hygiene, keeping himself fit, etc. This view was probably an old Doric one.

Female inversion played no rôle in Greek civilization and was looked on as degeneracy. There was always an Amazonian virago in association with an overfeminine young girl whom she corrupted. There was never any attempt to dignify female inversion. However, Plutarch mentions that in Sparta respectable matrons often made love to young girls and formed attachments with them.

Licht[2] published a pamphlet on Greek love as found in the pages of the satirist Lucian, and makes original comments. Of the purity of the Doric form of homosexuality no one can doubt for a moment who has read the work of Bethé and others.

The classic Greek period was the golden age for boys and the boy and youth was the centre of the stage, everything revolving about him. As soon as he had attained a certain age his education was taken over entirely by men and the whole system—all that was done for him—had the single object of giving him a beautiful body. Hence of course the physical culture. Perfection of action presumably connoted beauty of form. Of the great heroes of mythology and prehistory many were noted for great physical beauty. Handsome youths were always in great demand on state occasions, as weddings and sacred dances. They were also needed as pages.

It was necessary for the object of love to be a parasite on the lover. Equals in all respects could not enter into this relationship. It seems to have

[2]Licht: *Lucian and Greek Homoerotic.*

Fig. 14.—Hermaphrodite. Musseo Nazionale, Rome. Hellenistic period. The last step in the confusion of the sex balance. The ideal union in one body of the long hair, large breasts and soft contours of a woman, with the developed sex organs of the male.

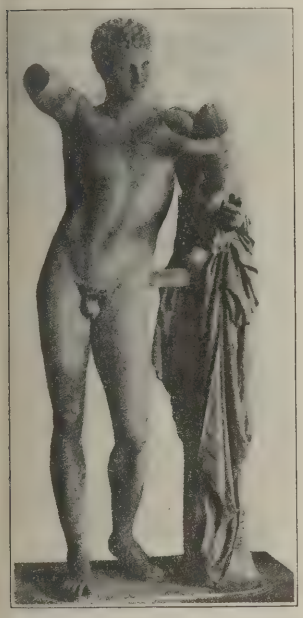


Fig. 11.—Hermes of Praxiteles. Fourth century B. C. A strong and muscular body but with such a veil of graceful languor thrown over it as to come very near to the point of effeminacy.

Fig. 15.—The Farnese Hercules in the Musseo Nazionale, Naples, Hellenistic period. An example of the reversion in late Greek sculpture to the primitive "cave man" type of masculinity.

been common for the object to be inferior in one or more respects. Often it may have been only in years but in some cases the beloved was low born, and perhaps an alien, who could not speak without some accent; or the inferiority was in wealth, this perhaps being very common while inferiority in rank was evidently also common. This inferiority naturally made a chivalrous relationship possible. The object was often of great beauty and perfection.

Whether the pure or impure form is thought of it is only necessary to visualize these attachments to imagine that the girl of heterosexual passion is replaced by a boy. Nothing is lacking that is found in heterosexual love. Not much is said of the attitude of women toward boy love but there is enough to show that they were very jealous of the boy rivals although we read of no tragedies from this cause.

Lucian was a scurrilous satirist who flourished between 120 and 180 A.D. Greek love had then become uniformly gross but even the homosexual lovers of the heroic ages did not escape his slurs. He was the first to use the "imaginary conversations" of dead with dead or dead with living to bring out situations.

There is a long dialogue in poetry between Jupiter and Ganymede which abounds in sensualism.

In a typical case of attachment to a boy, Lucian states that so absorbing is the passion that in the absence of the object the lover can only live with him in memory. All of his sayings and actions are called up in mind and the lover is as shut off from the outer world entirely. He forces himself to imagine that the object is acutally present. Polystratus fell in love with a boy who was an alien, a good for nothing, a barbarian who only spoke Greek with an accent, and made him his sole heir.

The general nature and treatment of the transference neuroses are no longer a mooted question. The principles and mechanisms underlying them are so well known that even the beginner in psychoanalysis may handle them successfully. But the conversion forms of the neuroses, the compulsive states with their ceremonials as well as morbid fears and obsessions, are not so easily handled. While hybrid forms of narcissism and homosexual neuroses, paranoid states, ill defined ideas of reference, and even hypochondria, all cluster about the disorders of the ego, they are in such confusion

Fig. 16. — Crouching Venus. Vatican museum, Rome. Hellenistic period. The reversion in late Greek art to the unmitigatedly feminine or "vamp" type.

Fig. 12.—Detail of the Apollo from Sutri - Musseo Nazionale, Rome. Hellenistic period, showing the extreme effeminization of the male figure. The softness and roundness of contours, the long and daintily arranged hair, the girlish features and prominent breasts make this Apollo little removed from the Hermaphrodite.

Fig. 10.—Theseus, from east pediment of the Parthenon by Pheidias. Second half of the fifth century, B. C. Very refined and beautiful but not in such measure as to overbalance the essential grandeur and masculinity.

that it is exceedingly difficult to isolate the types.

It may fairly be taken for granted that the general conception of the psychobiological formula of Freud as modified by Burrow explains the mechanism of homosexuality and its attendant neuroses. In brief, the substance of the theory is as follows: According to Freud, the two determining factors in the production of homosexuality are the love for the mother, and the love for one's own body. These two components—the mother-complex and the narcisissism—are invariably present and stand to each other in a relation of contrast, the narcissism being a consequence of the repression of the mother-ideal. That is to say, the person rids himself of the mother-image as object, by identifying himself with the mother and replacing her with his own person as the sexual object. Later, through an association of similarity, he extends his object to include other persons of his own sex. Thus we have the mother-complex giving way to narcissism as the first step, the narcissism yielding homoerotism or homosexuality as the second. Such are the factors and related mechanisms which have been offered by Freud to explain the development of the disposition to homosexuality. Burrow's modification, which is clearer, may be stated as follows: We find that the child, both male and female, is strongly identified with the body and person of the mother before and for some time after birth. At the time of birth it begins to reduce the oneness or identification with the mother, but before a full separateness is attained the child gradually swings its attitudes of attachment from the mother to its own body and person. It loves itself, not only because it is pleasurable and the immediate object at hand, but because the identification with the mother follows the love-concern of the mother, and that in the growing child's mind is the mother's love for his own body and person. When the subjective or mother-identification state exists beyond the average in strength and duration, the psychic system remains strongly infantile, emotional and introverted. If the child is a male, the tendency is to develop mentally in a feminine way; and if it is a female there is a tendency to develop mentally in a masculine way. Thus, if we may disregard the biological inheritance, there is a distinct psychological reason for homosexuality.

(To be concluded)

Contributors to the Science of Medicine

CHARLES McBURNEY, M.D.

Charles McBurney, one of the foremost figures in American surgery from 1890 to 1900, was born in Roxbury, Mass., on February 17, 1845. His father, who was of Scotch-Irish descent, came to this country when he was a boy and became a manufacturer. His mother was a descendant of old Maine and Massachusetts families. McBurney received his early education in the Roxbury Latin School and the Boston private schools. He received the degree of A.B. from Harvard in 1862 and of M.A. in 1866. In 1870 he was graduated in medicine from the College of Physicians and Surgeons of New York, and from that time until his retirement in 1907 he made New York City the field of his work. His first position was that of surgical intern at Bellevue Hospital. After serving for eighteen months in this capacity, he went abroad and studied surgery in Vienna, Berlin, Paris and London. Returning to this country, he began practising in New York in 1873, and a year later became associated with Dr. George G. Peters, with whom he remained until the latter's retirement ten years later. The list of important positions held by Dr. McBurney gives an outline of his professional career. He taught at the College of Physicians and Surgeons from 1873 until 1900, first as assistant demonstrator of anatomy under Dr. Henry B. Sands, then as lecturer on the anatomy of the nervous system from 1878 until 1880, as lecturer on operative surgery from 1882 until 1889, as professor of surgery from 1889 until 1894, and as professor of clinical surgery from 1894 until 1900. In 1875 he had been appointed attending surgeon to St. Luke's Hospital, in 1880 to Bellevue, and in 1888 was given charge of the entire surgical service of the Roosevelt Hospital, succeeding Dr. Sands, a post which he filled until 1900. Other positions held were those of consulting surgeon to the New York Hospital, St. Luke's Hospital, the Presbyterian Hospital, the Hospital for the Ruptured and Crippled, the Orthopedic Hospital, and St. Mark's Hospital. He was a member of the New York Surgical Society, the Practitioners' Society, the Roman Medical Society, and was a fellow of the Royal College of Surgeons of Edinburgh, a corresponding member of the Société de Chirurgie of Paris, and an honorary member of the Medical Society of Constantinople.

Dr. McBurney's most important work was done during his incumbency at Roosevelt Hospital. His workshop and laboratory was the Syms Amphitheatre, planned and built under his direction, and at that time the best surgical amphitheatre in the country. One of the many devices worked out there by him, in cooperation with Dr. Frank Hartley, was the modern steam sterilizer, now in general use. Aseptic surgery was at this time still in its infancy and through his efforts was raised to the high place it now occupies. It was through his experiments that it was demonstrated that rubber gloves were not only advisable but necessary for the surgeon and entire personnel of the operating room. His method of using dry gloves with armlets is now general. Dr. McBurney is best known as the discoverer of McBurney's point in the diagnosis of appendicitis. This is a spot located from one and a half to two inches from the anterior superior iliac spine in a line drawn

thence to the umbilicus. This is the usual situation of the base of the appendix and the place where localized pain and tenderness are almost invariably found in cases of inflammation. Deaver writes concerning McBurney's point that "it was a valuable advance, not so much because the pain in every case is just in that spot, but because it put into the physician's or surgeon's thoughts, in a practical, concrete way, a ready method of excluding every other disease with almost absolute certainty; and, though it is not always possible to deny the existence of appendicitis when pain and tenderness are in another place, it is a very rare thing for the signs to be circumscribed in this way and for the affection to be other than appendicitis." McBurney proposed also as early as 1893 the original gridiron or muscle splitting incision, since modified to gain more room in case of emergencies. Some members of the profession feel that McBurney's most important contribution to the treatment of appendicitis lies, not so much in the "point" or in the gridiron incision, but in what he did, in his writings and through constant and untiring effort in his clinics, to convince the medical profession that acute appendicitis is purely a surgical affection requiring immediate surgical care. Other permanent advances in surgical technic originated by Dr. McBurney are his tractor for reducing fracture dislocation of the shoulder joint; a small transperitoneal incision for the fingers of the assistant to compress the common iliac artery in disarticulation of the hip joint; the McBurney staff for rapid perineal section; his transduodenal method of removing stone from the common bile duct; and the McBurney hooks for skin grafting. As an operator he was supremely careful and accurate, so that the tissues received only the least possible injury, and it was never necessary to go over twice the same step or field. In rare and difficult cases he never operated in public. Among operations in which he was most interested were hernia, resection of the knee for tuberculosis, and amputation of the breast for carcinoma. To his patients he was always extremely gentle and considerate, and held their absolute confidence. Dr. Charles H. Peck writes of Dr. McBurney: "Although a good student of his specialty, Dr. McBurney was not a scientist in the restricted use of the term, but shone by his strong common sense in his attitude toward his patients. He could not have been called a 'brilliant' operator, but his lack of hesitation, founded on the care with which he planned every operation and the thoroughness with which he completed each step before passing to the next, resulted in a great saving of time and left the spectator with the profound impression that he had seen a master of his art at work. Bold, yet a great respecter of tissues, the finished result of his operations left little to be desired." He was a remarkable diagnostician, in spite of the utmost simplicity that marked his methods of examination. He was called as consultant to the bedside of President McKinley a few days before the latter's death.

Charles H. McBurney

As a teacher and lecturer, he was preeminently clear, simple, and practical. In his teaching, he made it a point to give thorough instruction in a few of the most usual, fundamental, and important medical subjects, rather than to take up rare or difficult cases and procedures that would seldom occur in his students' practice.

As a writer Dr. McBurney's most notable contribution to the literature is probably his classic paper on appendicitis, entitled Experience with Early Operative Interference in Cases of Diseases of the Vermiform Appendix, which was published in the New York Medical Journal for December 21, 1889. This article emphasizes the importance of McBurney's point. Other important contributions are Dislocation of the Humerus, Complicated by Fracture at or Near the Surgical Neck, with a New Method of Reduction (*Annals of Surgery*, 1894); Removal of Biliary Calculi by the Duodenal Route (*ibid.*, 1898); Use of Rubber Gloves in Operative Surgery (*ibid.*, 1898); Remarks Concerning the Practice of Aseptic Surgery (New York Medical Journal, 1902); Technic of Aseptic Surgery (*International Textbook of Surgery*), and contributions to Dennis's *System of Surgery*.

Personally, Dr. McBurney was much beloved by patients, staff, and colleagues. He was a man of great charm of manner and person and an able and dignified executive. He was a true sportsman and a great lover of outdoors and nature. His death, which occurred on November 17, 1913, at the home of his sister in Brookline, Mass., was from heart failure brought on by overexertion during a hunting trip in Maine.

Editorial Articles

OBESITY, BRAINS AND CHARACTER

There seems to be a conviction that the mere possession of superabundant adipose deposit endows its owner with good humor and good nature. Or rather, perhaps, that obesity and an equable temperament go together. Whether this combination is supposed to be the result of placidity and phlegm, in short, a state of bovine contentment, has never been clearly explained. For after all it is but a supposition.

True, the belief is probably as old almost as the hills. According to Shakespeare, Julius Cæsar held the view and said: "Let me have about me men that are fat," referring particularly to the danger that lurked behind "the lean and hungry look of Cassius." Fat men, while credited usually with good humor and good nature, are invariably denied the possession of any great intellectual capacity. It may be mentioned that in fiction there are fat men who are thoroughly bad and who have considerably more than their fair share of brains, as well as fat men who are good natured but not distinguished by intelligence. Count Fosco, in Wilkie Collins's *Woman in White*, is, perhaps, the best example in fiction of an immensely fat man who also contrived to be a thoroughly capable villain. His cleverness is insisted on throughout the story, as is also his ponderous bulk. Marion Halcombe, although she both feared and hated him, began by finding much that was charming in his personality. Her description of him and her views on obesity so well express the opinions of many that it will well bear quoting: "He is immensely fat. Before this time I have always disliked corpulent humanity. I have always maintained that the popular notion of connecting excessive grossness of size and excessive good humor as inseparable allies was equivalent to declaring, either that no people but amiable people ever get fat or that the accidental addition of so many pounds of flesh has a directly favorable influence over the disposition of the person on whose body they accumulate. I have invariably combated both these absurd assertions by quoting examples of fat people who were as mean, vicious and cruel as the leanest and worst of their neighbors. Holding these strong opinions as I do at this moment, here, nevertheless, is Count Fosco, as fat as Henry the Eighth himself, established in my favor at one day's notice without let or hindrance from his own odious corpulence."

However, Miss Halcombe found that Count Foscoe's cruelty and viciousness were concealed, when he desired, under the mask of a charm of manner which revealed to those who saw the mask withdrawn, the infinite subtlety and cleverness of the man. Fiction abounds with men and women who were fat and clever and of strong character, who were fat and mean and vicious, who were amiable nearly to idiocy, and who were just ordinary individuals. It is no doubt much the same in real life. There is another aspect or a variation of this aspect of the matter, which is that of obesity and genius often allied. Theophile Gautier once brought forward this question in one of his inimitably, frivolously witty essays with an understratum of truth. As Gautier himself was a genius or near akin, his words are entitled to attention. Perhaps, too, Gautier, who himself was a mountain of flesh, was swayed by that fellow feeling that makes us wondrous kind. Among those he mentioned and poked fun at, although the arrows were somewhat barbed, were Victor Hugo, Balzac, Dumas, and Rossini contemporaries, and undoubtedly geniuses and who were of abnormal obesity, in the case of Dumas of abnormal proportions. Gibbon, the great historian, was so corpulent that when he fell on his knees to Madame de Crousaz, she had to ring for the servant to help him to rise. Thomson, the poet of *The Castle of Indolence*, described himself as "more fat than bard beseems," and Leigh Hunt said of Gay, the author of *The Beggar's Opera*, that he was "a pleasant climax of obesity." William the Conqueror, a military genius, was of immense proportions and carried an undue weight of fat.

There is no especially close relationship between obesity and genius, but, on the other hand, the burden of "too too solid flesh," which Falstaff bore, does not preclude the possession of genius, brains, character, or meanness, viciousness, duplicity, or all the vices and ignoble traits.

It is probable that some of the instances of obesity referred to above were developed if not caused by the habits of life. Given a predisposition by heredity, Futcher has traced a clear history of heredity in sixty per cent. of his cases, the manner of living and especially of diet of men as Victor Hugo, Balzac, Gautier, Gibbon, and Gay will largely account for the increase of fat. They led essentially sedentary lives, were selfindulgent, or careless of their diet, and, in the case of some, large eaters of rich food and imbibers of good wine. Then again, the question of race must be taken into consideration, the Dutch, South Germans, South Italians, and the natives of India and Ceylon are all inclined to obesity. Count Fosco was an Italian. The influence, too, of the ductless glands has much to do with

corpulence. For example, there are two clinical conditions in which the thyroid plays an important part in hypothyroidism and hyperthyroidism. The person with hypothyroidism tends to increase in weight and the basal metabolism is much lower than usual. In hyperthyroidism the reverse is the case. When the basal metabolism is low, it is obvious that the person will tend to get fat. The action of the other ductless glands is not so well understood, although when the posterior lobe of the pituitary gland is damaged by a tumor, considerable changes take place in the metabolism and weight is put on.

The gonads also have much influence on metabolism and consequently on body weight. There is no relationship between obesity and genius, cleverness, or character, although, all else being equal, the placid person of either sex, who has, perhaps, a tendency to hypothyroidism, is more likely to become unduly fat than the restless individual, who has a tendency to hyperthyroidism. According to Dr. Hyman Goldstein, writing on The Rôle of the Endocrines in the Growth and Nutrition of Children, states that thyroid insufficiency produces the lazy, obese and constipated type of children. He also says that they are sluggish mentally. Is this always the case or does the mental sluggishness depend upon the degree of hypothyroidism? If thyroid insufficiency signifies obesity and dullness of intellect, then the men of genius, the clever men whether rascals or otherwise, did not gain their surplus fat by hypothyroidism.

This is a fine point. There is yet much to be learned concerning the action of the endocrine glands and it is more than probable that obesity is intimately related to inefficient working of these glands. In any event, because a man is inordinately fat does not prevent him from being inordinately clever or a genius, nor in the very nature of things is it essential that he should be easy going.

LITERATURE AND MEDICINE

Many medical men in all countries have been literary men as well, some of them distinguished writers on subjects outside their own province. Some have introduced a true literary flavor into their medical and surgical writings, although it must be confessed that there have been and are few members of the medical profession who have written or who write in a cultured manner and especially of the English speaking branch of the profession. A large number in this country appear to think it a sign of effeminacy to express their views in good English, but pride themselves somewhat on the use of the vernacular, protesting that all that matters is that their readers should understand what they write easily and clearly. There is no doubt that this is a mistaken mode of regarding the question, as a well expressed, well written article will carry more weight than one written carelessly.

The old time doctor was perhaps from the literary viewpoint in certain respects better equipped than the modern prototype—he had to know Latin, although, of course, in many instances the knowledge was superficial and indeed a prostitution of a noble language. Latin was used among lettered physicians when medicine was made a mystery by its professors and every endeavor was put forth to keep it so, and for a doctor to speak in a foreign tongue aided in the assumption that he was a being apart and suitably impressed the public.

Mr. Edmund Gosse, the well known writer and literary critic, who delivered the first David Lloyd Roberts Lecture at the Royal College of Physicians, London, on November 20th, pointed out that in those days it was as indecorous for a medical man to discourse of physic in any language than Latin as to walk in the streets without a wig, although it was in the same period that Voltaire uttered his bitter jibe that doctors poured drugs of which they knew little into human bodies of which they knew less. But the greatest of ancient physicians were conscious of literary form—Hippocrates for instance, was careful to write simply and clearly, seemingly that women and girls should be able to understand his meaning. Ambroise Paré, the great French surgeon, who, probably modelling his style after the incomparable Greek physician, ostentatiously wrote in his own language, had a direct influence in accustoming English speaking physicians and surgeons to express their views in English. It may be mentioned, however, that Paré's daring in this respect was highly resented by his fellow physicians who tried to suppress his works on the ground that their terms were intelligible outside the profession.

In this country and in Great Britain long after the time of Paré, doctors continued to wear wigs, to employ indifferently good Latin and to carry gold-headed canes, to pose, in fact, as the mysterious medicine man. Sir Thomas Browne of immortal memory with the divine gift of language and ecstasy—and Locke, the friend of the practical, keen witted Sydenham, with his tolerant candor brought the various professions together in a unison which could never be broken up again into the discord of the Middle Ages. At the end of the seventeenth century the barrier between imaginative literature and medical science was broken down once and for all, since when there has been a sprinkling of medical men who have made something of a name in literature.

Those of the seventeenth century were not in the front rank or near the front rank in literature. And

of those of the eighteenth century Oliver Goldsmith, who shed lustre on literature and was the shining light of his time as a literary man, was hardly known as a medical man. Mark Akenside was an excellent anatomist and a passable poet, while Tobias Smollet was a splendidly vigorous writer, but as a surgeon-apothecary was of little repute.

The truth is that medicine and literature are jealous mistresses, who exact the best in a man to excel in either, that there seldom have been men who have won lasting fame in both spheres. Perhaps our Oliver Wendell Holmes may be cited as one of the very few who have done so. He was distinguished and original as a physician, but even his fame rests rather on the literary output than on any work he did as a medical man. Yet there has been always an identity of sympathy between doctors and men of letters not to be found between medical men and members of other professions. It may, too, be stated with emphasis that a good education is not a handicap to a medical man, as is said by some carping critics, and that to be able to express himself in well phrased English is a decided advantage. In short, it is not incompatible to be at one and the same time, a literary man, even a highly cultured literary man, and an able and skilful physician or surgeon.

GASTROENTEROPTOSIS AND ITS CAUSES

The treatment of gastroenteroptosis is frequently somewhat of a stumbling block to the surgeon, that is, the selection of cases suitable for operation. Overenthusiasm for a certain operation often does more harm than good as it may and does lead to its adoption in unsuitable cases by surgeons who have more courage than judgment, thereby discrediting in the eyes of the conservative surgeon an operation which is found eventually to be of the highest value. Operations, which, when first introduced, were found to present many and great difficulties, are now standardized and practised after plan with little difference in technic by surgeons in all parts of the world.

The momentous question is to choose the cases suitable for operation. This phase of the situation was emphasized not long ago by Mr. James Berry, of London. He pointed out that the facility of operation was in some respects almost a menace because it led to operations being performed by surgeons of little skill, experience or wisdom, with the result that a particular form of operation has been discarded not on account of any technical defects, but because it was unsuitable in an individual case. For such reasons, as Sir Berkeley Moynihan points out in an introduction to Dr. Robert C. Coffey's recent monograph on gastroenteroptosis, the whole subject of visceral prolapse has been discredited in the minds of many physicians and surgeons. There has perhaps been too much surgical adventure in such cases. Coffey, in the preface to his book, reviews the work on stasis and ptosis in a most thorough and searching manner. He refers to investigations and clinical work on the subject by Rovsing, Lane, Longyear, Richard Smith, Goldthwait, Franklin Martin, Klose, Wilms, Waugh, Jackson, Walton, Klemm, Blake, and others.

Coffey deals with the work of Lane more than with that of anyone and draws attention to the fact that Lane has taught most of what is known of the end results of stasis and of the nature of the acquired bands found in the abdomen. His law, Coffey holds, of the crystallization of the line of force is probably the most important observation that has been made in connection with the subject. He thinks, however, that he has failed to recognize the importance of the normal prenatal fixations of certain abdominal organs and that deficient prenatal fixation was the underlying cause of much of the membranous development. In the book, also, the work that N. Mutch did under a grant from the British Medical Association on the bacteriology of the gastrointestinal tract is summarized and this report appears to justify Lane's statements as to the menace of chronic intestinal stasis.

As for treatment, Coffey lays down his views as to the general indications for surgical treatment, which, in the main, are conservative. He regards gastroenteroptosis from the anatomical rather than from the physiological aspect and believes that enteroptosis depends to a large extent on whether the normal peritoneal fusions have taken place during embryonic life. It is on this point that Coffey chiefly differs from Lane in his views the latter taking the stand that the bands and other mechanical deviations from the normal are acquired. Coffey is convinced that, once displaced, the abdominal bands, which are the chief defence of the organism against falling and further falling of the viscera, give rise to abdominal symptoms. He is, moreover, of the opinion that merely dividing these bands is a comparatively useless procedure and can only afford temporary relief, the bands becoming fixed as strongly as ever. He bases his treatment on the proper fixation of the dropped viscera and division of the bands which do not reform when the viscera remain in their normal position, where they will remain if they are fixed securely.

Coffey, then, is of the opinion that chronic intestinal stasis is by no means responsible for all the anatomical changes which bring about gastroenteroptosis, although he allows that to stasis is partly

due the condition, while Lane insists that it is owing to long continued intestinal stasis that enteroptosis ensues. Other authorities take Coffey's or Lane's views or modified views on the matter. But even allowing that chronic intestinal stasis is only responsible, in part, for gastroenteroptosis, would it not be wise, as far as possible, to prevent stasis from developing, that is, to treat it in its early stages by diet, exercise, and so on. There is no doubt that the secret of success in medicine lies in early diagnosis and efficient preventive treatment. The difficulty is that persons do not consult the physician, as a rule, until they feel really sick, or, if they do, obtain medical advice for a minor ailment. They do not follow the advice for long, but quickly lapse into their habitual mode of living. The public need to be educated in medical matters and especially as to the wisdom of seeking medical advice when out of sorts; if this were the custom, cancer and many other chronic diseases and, perhaps, gastroenteroptosis, would be far less common than at present.

SUN TREATMENT OF TUBERCULOSIS

It is beginning to be generally believed that the remedial and even curative properties of the sun are almost illimitable. Certainly, the light of the sun is the most potent agent in the field of preventive medicine. Lack of sunlight is responsible for various diseases and conditions of ill health and its rays, unimpeded by clouds of dirt, so often the case in London and in other industrial cities, exert a remarkably effective healing power. There are two diseases which are strikingly amenable to the action of sunlight, tuberculosis and rickets. For long it was held that diet was the important factor in the successful treatment of these maladies, but these views have changed considerably and, in the opinion of the best known authorities on tuberculosis, sunlight takes the first place, and with regard to rickets opinions are veering in the same direction.

The most marked results of experience of sunlight as a curative agent is to be witnessed at the world famous clinic of Dr. Rollier, at Leysin, Switzerland, which has become a Mecca for those closely concerned with the tuberculosis problem. Dr. Agnes Savill discussed Leysin and the treatment carried on there at a meeting of the London Association of the Federation of Medical Women on December 11th last. Dealing with the scientific aspect of the treatment, the physical properties of light with its bactericidal and chemical powers were discussed. It was pointed out that the ultraviolet rays, though apparently of low penetrating power, yet seemed of great therapeutic importance, and it was suggested that their wave length might be modified by passage through the pigment containing basal layers of the epidermis.

An interesting point on which Dr. Savill insisted was that the good results were due to the sunlight itself, rather than to the pure air and good conditions. This was indicated by the fact that results seemed to be distinctly poorer in cloudy weather and also that very severe reactionary effects could be induced by improper or careless dosing. It must be emphasized that light, like any other therapeutic agent, requires careful regulation, the dose being studied for the individual and based on the measurement of definite reactions, rise of temperature, dermatitis, exhaustion, etc. It was worthy of note, too, how health was maintained by the action of the light alone, the patient being entirely at rest, and no massage being used. Dr. Savill then discussed the various artificial substitutes with which she was acquainted and ended by stressing the need for accurate doses of sunlight, for a pure atmosphere, and for a lengthy treatment, if a successful result was to be anticipated.

Dr. Helen Mackay, who studied rickets in Vienna during the war, while the conditions there were peculiarly favorable for such investigations, described her experiences from the experimental side of the question, both in Vienna and at the Infants' Hospital, London. Dr. Mackay was deeply impressed with the value of sunlight in the treatment of rickets. The discussion was exhaustive and dealt with the relation of pyorrhea alveolaris to sunlight and the questions of the relation of impure air to tuberculous cervical adenitis, the advisability of improving the health of the school child in this respect and also the practical side of treatment and the type of patient who is most likely to be benefited by the treatment.

The harm done to health by dirty and smoke laden atmosphere in industrial areas is now acknowledged and it is recognized that one of the longest steps towards eradicating disease is to improve the environment of the town dweller and to render the air of crowded industrial centres as pure as possible. A smoke laden atmosphere, besides being unhealthy in itself, does its greatest amount of injury by preventing the light of the sun from reaching those who live where such conditions more or less prevail. Fortunately, in American cities the air is generally clear and relatively unpolluted, but in many the sun is not given the opportunity for fully diffusing its disinfecting, invigorating effects because of elevated railways, narrow streets, and high buildings. Light is life and lack of it causes ill health. The therapeutic virtues of sunlight can scarcely be overestimated.

FREE INSULIN IN ONTARIO

Dr. Forbes Godfrey, minister of health of the Province of Ontario, made one of his first official acts a formal decree announcing that his department would provide free insulin for all diabetics in the province unable to pay for this treatment. "I want to put the workingman of Ontario in the same caste, as regards health, with the millionaire," said Doctor Godfrey, who is a Conservative, succeeding in office a Farmer-Labor minister, so his humanitarian act has been called communistic and even revolutionary. The condition attached to the free receipt of insulin is a certificate from the applicant's physician stating that the former is unable to pay for the remedy.

The source of the supply for the province is the Connaught Laboratories of the University of Toronto, which are really nine laboratories at various places, all under Government control. Each of these laboratories is being equipped to furnish a supply of insulin and to afford the treatment for physicians in their respective localities. The University of Toronto, cooperating with the Toronto General Hospital, gave last summer short courses in treatment by insulin, to which general practitioners, especially from the rural or semiurban districts of Ontario, flocked in large numbers to be the better fitted to serve their public. Through these physicians and the nine Government laboratories, it is reported, 161 needy patients received a total of 114,000 units of insulin at a cost to the Government of $2,281, during the first month, September, of free distribution. In October the number of units was increased thirty-three per cent. and the number of patients as well. Six new distribution centres were added. Yet only a small proportion of the cases of diabetes in the province in a stage where insulin may be effectively used were reached, for the total of such cases is estimated at at least one thousand. This humanitarian act of Ontario and of Minister Godfrey is one to be emulated elsewhere.

JAPANESE EARTHQUAKE RELIEF

An interesting account of the rapidity and efficiency with which the Japanese rallied and devoted their best efforts to relieving the frightful conditions brought about by the late earthquake is given in a recent issue of the *World's Health*. The first action of the Government was to appropriate a sum of two hundred and sixty-five million dollars for relief work. A committee called the Imperial Japanese Earthquake Relief Committee was formed with the Prime Minister as chairman. The devastated areas were placed under martial law, and the Government arranged to sell supplies at cost to those who could afford to pay, using the proceeds for distributing free articles to the destitute. The Japanese people themselves raised fifteen million dollars by voluntary contribution, in addition to large gifts from the Imperial family and the Government. The Japanese Red Cross began work on the day of the earthquake with a sum of two million five hundred thousand dollars for their work. Since their headquarters had been burned, they established a temporary office in the Red Cross Hospital at Shimoshibuya and mobilized all the staffs at the branches throughout the country, as well as those of the Manchurian and Korean branches, instructing them to organize at once relief contingents. This was done and parties were sent out, one after another, to the devastated districts. The society constructed in Yokohama and Tokio temporary hospitals with accommodations for fifteen hundred cases. As regards precautionary and preventive measures, the society organized mobile relief columns, centres for rapid detection epidemic or contagious diseases, the transport of patients, and the carrying out of other measures for sanitation and disinfection.

Some of the nations cooperating in the relief work were the United States, Australia, Canada, Cuba, Ecuador, France, Great Britain, Holland, Italy, Poland, Russia, Switzerland, and Sweden.

Obituary.

SIR JOHN TWEEDY, F.R.C.S.

London, England

The best known ophthalmic surgeon in Great Britain, Sir John Tweedy, died in London after a short illness at the age of seventy-four. Born at Stockton-on-Tees in the north of England, Sir John received his medical training at University College medical school and hospital and became qualified in 1872.

He took up ophthalmic work and became a clinical assistant at Moorfields Ophthalmic Hospital in 1874. In 1879 he was elected an assistant surgeon at Moorfields, and in 1886 was made full surgeon. In the meantime he had been appointed assistant ophthalmic surgeon at University College Hospital and professor of ophthalmic medicine and surgery. From 1885 to 1904 he served on the staff of University College Hospital and on his resignation was appointed emeritus professor. He had been elected a Fellow of the Royal College of Surgeons in 1876; in 1892 he became a member of the Royal College of Surgeons and eleven years later president. He also served as president of the Ophthalmological Society of the United Kingdom of the Royal Medical Benevolent Fund and of the Medical Defence Union. Sir John Tweedy was greatly interested in medical politics and worked hard for the good of the profession. He was largely instrumental in the introduction of some necessary reforms. In 1906 he received the honor of knighthood and in the same year the University of Edinburgh conferred upon him the degree of a honorary LL.D.

Tweedy was an extremely clever writer and a journalist of the first rank. He was a prominent member for many years of the staff of the *Lancet*. Indeed, at one period of his life, it was a question with him whether he should not devote himself wholly to journalism rather than to practice. He was a friend of the Walsleys, who owned and edited the *Lancet* up to fifteen years ago. A month or so ago he was at the centenary dinner of the *Lancet*, although he was then feeling far from well. But loyalty to the journal with which he had had such intimate ties for years prevailed and he joined in the celebration probably to a considerable detriment of his health.

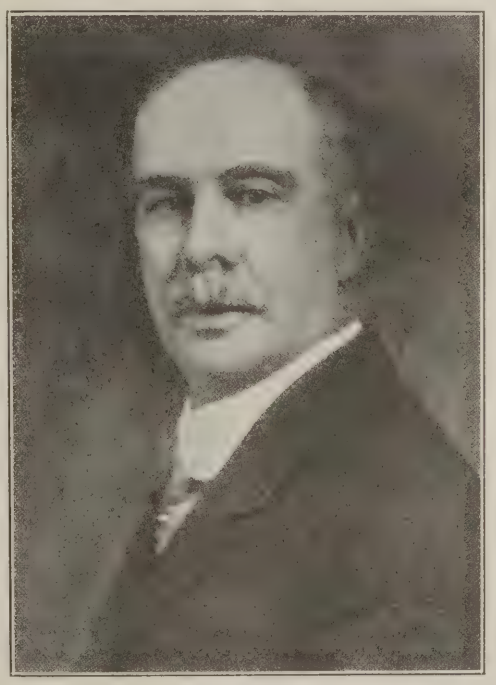
As well as being a skilful surgeon, Tweedy was a man of great administrative capacity whose advice was much sought and valued. In private life he was loved and highly respected by a large circle of friends.

LEWIS SAMUEL McMURTRY, A.M., M.D., LL.D., F.A.C.S.,

Louisville, Ky.

Dr. Lewis Samuel McMurtry, one of the great specialists of his time in gynecology and abdominal surgery, died from pneumonia at his home in Louisville, Ky., on February first.

He was born at Harrodsburg, Ky., in 1850. When he was still quite young, his parents moved to Lancaster, Ky., where his boyhood was spent. In 1870 he was graduated from Central College, and three years later received his degree of M.D. from the branch of Tulane University at New Orleans. He spent two years thereafter in clinical studies at the Charity Hospital, New Orleans, then went to Danville, Ky., and located, practising successfully there for several years. Later he came to New York for laboratory and clinical work, and also went to Europe for the study of surgery and gynecology. In 1889 he located in Louisville, where he limited his practice to gynecology and abdominal surgery. He occupied the post of professor of gynecology and abdominal surgery in the Hospital College of Medicine, later merged with the medical department of the University of Louisville. Among other honorable positions held by Dr. McMurtry were those of surgeon to the Louisville City Hospital, and to the Norton Memorial Infirmary. From 1905-1906 he was president of the American Medical Association. In 1909, Tulane University conferred upon him the honorary degree of LL.D. He was a member of the American Gynecological Society, with the rank of active fellow. He was also a fellow of the British Gynecological Society and of the Obstetrical Society of Edinburgh. He was one of the founders of the International Congress of Gynecology and Obstetrics, and his work won wide recognition, not only in the United States, but in France and the British Isles. At the time of his death he had served for five years as president of the State Board of Health of Kentucky. His wife was Mary E. Ball, of Covington, Ky., whose death occurred in 1880.



LEWIS SAMUEL McMURTRY

Dr. McMurtry was the author of numerous contributions to medical publications on his specialties, gynecology and abdominal surgery. He was known to his many friends and to his colleagues as a man of unusual charm of personality and integrity of character as well as a surgeon of exceptional skill.

SIR ARCHIBALD REID, M.R.C.S., L.R.C.P.

London, England

Sir Archibald Douglas Reid, R.B.E., C.M.G., well known as a radiologist, died on January 15th at Chur, Switzerland, aged fifty-two. He passed his medical student's career at King's College Hospital, London, qualifying as M.R.C.S., L.R.C.P., in 1901, and specialized in x ray work, paying the penalty for his devotion in impaired health. In 1920 he took the diploma in medical radiology and electrology at Cambridge. During the war he rendered valuable service as president of the War Office X Ray Committee, and was created C.M.G. in 1917 and R.B.E. in 1919. In 1911-12 he was president of the Electrotherapeutic Section of the Royal Society of Medicine. At the time of his death he was superintendent of the radiological department of St. Thomas's Hospital and he was at different times radiologist of the Westminster Ophthalmic Hospital and the Evelina and Paddington Green Hospitals for Children, medical officer in charge of the electrical department of King's College Hospital, and consulting radiologist of the Queen Alexandra Military Hospital, Millbank, the Royal National Hospital for Consumption, Ventnor, and the Cray Valley Hospital. In 1920-21 he was president of the Society of Radiologists and he was also joint secretary of the Radiology Section of the International Congress of Medicine, and honorary member of the American Röntgen Ray Society.

Sir Archibald was the editor of *Localization and Extraction of Projectiles,* and he also made various contributions on his special subject to professional treatises and journals. His paper, which opened the Bilingual Congress of Radiology and Physiotherapy, was published in 1922 in the *Archives of Radiology and Electrotherapy.*

CHARLES E. WUEST, M.D.,

Brooklyn, N. Y.

Dr. Charles E. Wuest, assistant medical examiner in charge of Kings County, died on January 28th at his home in Brooklyn. He was in his sixty-first year. Dr. Wuest attained, perhaps, his greatest fame as an expert on autopsies, and was one of the foremost in this country. Born in New York City, he was graduated from the College of Physicians and Surgeons in 1888. He conducted a successful private practice until his appointment in 1898 as Kings County Coroner. Among other posts filled by him were those of pathologist at Bellevue Hospital, a position which he held for many years, of staff physician to the Wyckhoff Heights and to Saint Catherine's Hospitals, and of lecturer at Long

Island Medical College. Upon the abolition ten years ago of the office of Kings County Coroner, Dr. Wuest was made assistant medical examiner in charge of Kings County, a post which he filled with ability and honor.

His illness and death were very sudden. He was apparently in normal health upon arising in the morning, and a few hours later suffered a heart attack from which he never rallied. He is survived by his widow, two children, and a brother.

News Items.

Homeopathy Convention.—The American Institute of Homeopathy announces its eightieth annual convention to be held on June 22 to 27, 1924, at Cleveland, Ohio.

Change of Name.—The *North American Journal of Homeopathy* will be known in future as *The Pan-Therapist* and will be published at 546 Surf Street, Chicago, Ill.

Dr. Salamonowicz and Wife Here.—Dr. Arthur A. Salamonowicz, a leading surgeon of Russia and first medical consultant of the Russian army during the war, arrived in New York with his wife, Madame Helene de Netchajeva, operatic star, who is to make a concert tour of America.

Dr. Brown Radiographic Director at St. Luke's.—Dr. Percy Brown will replace Dr. Leon T. LeWald, who resigned as director of the radiographic department at St. Luke's Hospital. Dr. Brown is past president and recently Caldwell lecturer of the American Röntgen Ray Society.

Western Electrotherapeutic Association Meeting.—The sixth annual meeting of the Western Electrotherapeutic Association will be held in Kansas City, Mo., Thursday and Friday, April 17th and 18th, under the presidency of Dr. Harry H. Bowing, of Rochester, Minn.

Dr. Emerson Returns From Germany.—Dr. Haven Emerson, professor of public health administration at Columbia University, has just returned from a trip to Germany, made upon the request of General Allen's committee for the relief of German children.

Dr. Smithies to Give Third Bedford Lecture.—The third Bedford lecture of the Pittsburgh College of Physicians will be given April 24, 1924, at Pittsburgh, by Dr. Frank Smithies, professor of medicine at the University of Illinois, Chicago, on The origin and development of ethics in medicine and their influence on medical practice.

Yale Medical School Survey.—The Department of Public Health of the Yale School of Medicine is now making a study of health administration in communities of ten to thirty thousand population, in an effort to determine what health machinery in the way of personnel and money is needed in communities of this size for an adequate public health program.

Whiskey Standards in New Pharmacopœia. — Announcement has been made by E. Fullerton Cook, chairman of the revision committee of the United States Pharmacopœia, that standards for whiskey and brandy as medicines will be included in the pharmacopœia now being revised. This is in response to a demand by the physicians of the country.

Summer Sessions in Public Health. — The United States Public Health Service announces a summer session in public health at Columbia University, the University of California, the University of Michigan, and the University of Iowa. The faculties include Dr. Michael M. Davies, Dr. Robert H. Gault, Dr. Emery Hayhurst, Dr. William H. Park, Dr. Earl B. Phelps, Dr. George C. Whipple, and others.

March Post-Graduate Lecture Schedule.—The following Friday afternoon lectures will be given at 5 o'clock at the New York Post-Graduate Medical School and Hospital during the month of March: March 7th, The most important prophylactic measures in diseases of women, by Dr. James N. West; March 14th, The limitations of bronchoscopy and esophagoscopy (with lantern slides), by Dr. Charles J. Imperatori; March 21st, The management of typical fractures, by Dr. John J. Moorhead, and March 28th, Multiple neuritis, by Dr. John J. MacPhee.

Appropriations for Medicine.—Appropriations amounting to $10,500,000 have been made to continue fellowships in physics, chemistry, medicine, and the biological sciences in the United States under the auspices of the National Research Council.

The University of Pennsylvania has received offers of two gifts aggregating half a million dollars—$250,000 each from the Rockefeller Foundation and the General Education Board—on condition that it raise a like amount. The offer was accepted.

Experimental Phonetics.—During the summer semester, April 15 to July 15, 1924, six places in the Laboratory for Experimental Phonetics will be open to non-Austrians in the University of Vienna for the purpose of research. Further information can be obtained by letter to E. W. Scripture, Ph.D., M. D., Professor of Experimental Phonetics in the University of Vienna.

Andrew Todd McClintock Memorial—Mrs. Andrew Todd McClintock, widow of Dr. McClintock, of Wilkes-Barre, Pa., has created a trust fund of her estate, amounting to approximately $500,000, to be known as the Andrew Todd McClintock Memorial, to be used to conduct researches into the nature, causes and treatment of gastrointestinal troubles.

Cancer Congress Held at Brussels.—The International Congress for the Prevention of Cancer, held at Brussels, was attended by Queen Elizabeth of Roumania, British and French Ambassadors, Sir Claude Hill and many medical celebrities. Professor Hartmann, vice-president of the Franco-Anglo-American League Against Cancer, and Frederick L. Hoffman, of New York, were among the speakers.

Medical Women Receive Honors.—Dr. Esther Lovejoy, chairman of the American Women's Hospitals and President of the Medical Women's International Association, has been decorated with the Cross of the Legion of Honor at the French Consulate, for service to France during and after the war.

Dr. Florence E. Kraker, of Philadelphia, who has just returned from China, has been appointed specialist in maternal hygiene in the Children's Bureau of the U. S. Department of Labor.

Child Welfare Board Appointments.—Dr. Benjamin Schwartz, first assistant medical examiner of New York City and visiting physician to Gouverneur Hospital, has been appointed consulting physician and director of the medical service of the Board of Child Welfare of New York City; Dr. Charles Gordon Heyd, professor of surgery at the Post-Graduate Hospital, has been appointed consulting surgeon, and Dr. George Schwartz, instructor in operative surgery at the Post-Graduate Medical School and Hospital and attending surgeon of the People's Hospital, has been promoted from attending to visiting surgeon.

Hospital Building Additions.—The Infantorium now situated in the Heckscher Foundation, Fifth Avenue and 104th Street, New York, has increased its capacity to fifty beds. The following physicians are members of the attending or consulting staff and have given their services during the past year: Dr. Louis Fischer, Dr. John A. Fordyce, Dr. Isidore Friesner, Dr. George McAuliffe, Dr. H. S. Baketel, Dr. Charles Gottlieb, Dr. William H. Stewart, and Dr. Samuel S. Burk.

A new nine story patients' pavilion of Roosevelt Hospital has been formally opened which will increase the capacity of the hospital by about one hundred beds. The entire new pavilion, including equipment, cost $1,500,000.

Personals.—Dr. Arthur I. Blau has been elected secretary of the new Central Medical Club in New York. Meetings will be held on the first Friday in each month.

Dr. Louis Tulipan has been appointed consulting dermatologist to the Child Welfare Board of New York City by Acting Mayor Murray Hulbert, and Commissioner of Health Dr. Monaghan.

Dr. C. S. Bluemel has been appointed editor of *Colorado Medicine*, beginning January 1, 1924.

Mme. Curie was honored by the French Government on the event of the twenty-fifth anniversary of the discovery of radium, at the Sorbonne. Rector Appell of the Academy of Paris, Professor Perrin of the Sorbonne, Dr. Declere of the Academy of Medicine and Leon Bérard, Minister of Public Instruction, made addresses. A second ceremony was the inauguration of the Curie Foundation and was presided over by Paul Strauss, Minister of Hygiene.

Foreign Correspondence.

LONDON LETTER

(From our own correspondent)

London, *January 5, 1924.*

CHRISTIAN SCIENCE AND THE ENGLISH CHURCH

Following upon the Lambeth Conference of 1920, at which the challenge of Christian Science was discussed, the Archbishop of Canterbury appointed a committee of clergymen and laymen to consider the matter and report. After nearly three years of consideration the committee has now reached definite conclusions, which are embodied in a report presented to the Archbishop and to be published shortly. The encyclical of the Lambeth Conference stated that members of the Church "ought to take more account of the recent growth of knowledge about the power of the spirit over mind and body," and declared there was much in Christian Science which ought to be found within the Church, where it would be supplemented by truths which are neglected in Christian Science. The Bishop of Oxford was appointed chairman of the committee, whose members included the Bishops of Southwark, St. Albans and Liverpool, and a number of eminent physicians, among them Sir Clifford Allbutt, Sir Robert Armstrong-Jones, Dr. William Brown, Dr. W. H. Rivers and Dr. Jane Walker. Evidence was heard regarding healing by faith, the laying on of hands, and the blessing of the sick, and the committee considered the relation of these to the work and practice of the Church. It is understood that although the report welcomes the recent development of spiritual healing, it will not satisfy the more ardent advocates of it. It declares definitely that "no sick person must look to the clergyman to do what it is the physician's or surgeon's duty to do."

PRESENTATION TO PROFESSOR ALEXIS THOMSON

Dr. Alexis Thomson has been professor of surgery at Edinburgh University for many years. On account of ill health he has been compelled to give up the active duties of his post. A few days ago an interesting ceremony took place in the Surgery Lecture Theatre of the University of Edinburgh, when Professor Thomson was presented with a handsome silver model of an antique bowl as a mark of affection on the part of his former students.

THE MIDDLEAGED A NATIONAL ASSET

A short time ago Mr. J. S. Alford, in his presidential address to the Institute of Sanitary Engineers, said that "a continuance of a decline in the death rate is both undesirable and unlikely." This expression of opinion has not been allowed to pass unchallenged by the Ministry of Health. Longer lives are not a burden to the nation, said a Ministry of Health official to a press representative the other day. According to his view, the march of hygienic development has resulted in a race of men over fifty who are more efficient and of more general value to the nation than the average man of fifty twenty or thirty years ago. Mr. Alford at the same time stated that the more intelligent classes appeared to be diminishing relatively to the less intelligent. The retort of the Ministry of Health to this is that there has never been a higher level of intelligence in Great Britain than at the present time. Sir George Newman's report on the further saving of infant lives was quoted in support of the argument that the figures implied a better physical and a more enlightened understanding of personal and public hygiene which must contribute to the well being of men of over fifty and sixty years of age. It is contended that instead of being a burden to the nation men reared under the present conditions of scientific instruction are a great asset to the nation when they come to middle age.

FUTURE OF LEEDS GENERAL INFIRMARY

Leeds General Infirmary has gained more than a national reputation for both surgery and medicine and naturally the inhabitants of Leeds, and indeed of Yorkshire, take pride in the institution and of the surgeons and physicians who work therein. As is the case with the voluntary hospitals in all parts of Great Britain, the general infirmary at Leeds has fallen on evil times and at the present time its financial situation is precarious. In order to arouse the interest of business and professional men in the question, a meeting was held on December 17th last. Among the schemes set afoot the collieries in Yorkshire are to contribute on the basis of one farthing a ton of coal raised, and the miners one penny a week each. These together are calculated to realize £15,000 a year. By other organizations of the business centre of the city it is hoped to raise £2,000 a year. All this and much more will be needed as it is computed that the deficit on this year's working of the General Infirmary will be between £25,000 and £30,000. At the General Infirmary there is a list of twelve hundred to sixteen hundred people awaiting admission for operations and to open a new ward would cost four or five thousand pounds a year. Today the cost of maintaining the infirmary is £100,000.

NEW YEAR'S HONORS FOR MEDICAL MEN

The list of New Year Honors includes the names of fourteen members of the medical profession. Sir Donald MacAlister, principal of Glasgow University and president of the General Medical Council, becomes a baronet. Knighthoods have been conferred upon Dr. Henry William Russell Bencraft, of Southampton, and Dr. Byrom Bramwell, of Edinburgh, great as a physician and teacher. The Military Order of Knighthood of the Bath has been conferred on Lieutenant General Sir William Boog Leishman, Director General of the Army Medical Service.

LATIN AMERICA LETTER

(From our own correspondent)

Balboa Heights, C. Z., *January 10, 1924.*

MALARIA ON THE CANAL ZONE

The Governor of the Panama Canal, in his annual report for the fiscal year 1923, gives very interesting data relative to the occurrence of malaria. He states that "The total number of malaria cases reported from the Canal Zone and terminal cities during the year compared with the two previous years is as follows:

	1921	1922	1923
Employees	325	176	216
Military and Naval Personnel	810	828	870
Nonemployees	459	243	657
Total	1,594	1,247	1,743

The increase in the number of cases of malaria among nonemployees this year was expected and predicted as a result of the new policy of allowing unemployed laborers to return to the zone to take up land for agricultural purposes. It is impracticable to sanitate completely the country in which these settlers live. They are widely scattered over the available parts of the zone, living in rude shacks near water courses and the lake, and are at all times exposed to malarial infection. About 1,805 licenses have been granted these settlers and it is estimated that 650 families are now living on the land. Each home has a pit privy, not covered nor water tight, but at least limiting the chances of intestinal infection. Many have learned to boil their drinking water, and some are undertaking drainage. Aside from malarial infection, the venture seems surprisingly successful in most instances. Ground has been cleared rapidly and already many of the settlers have achieved what appears to be economic independence, at least according to their standards; are rearing their families in contentment; and are perhaps in better circumstances than similar agriculturists in Panaman territory. They have a certain amount of supervision by the American authorities, including the sanitation and police forces, and have, at least until they are able to pay for it, free medical service at the Panama Canal dispensaries and hospitals. In spite of the physical risk of living in practically unsanitated areas, and the present resulting increase of malaria in some of our sanitated areas, the net result of opening up the zone to land settlers is a great gain to the community in increased and cheaper food supply, and in converting a large number of idle pauper blacks, former Canal employees, into selfsupporting and selfrespecting individuals. The large reservoir of available labor supply so established may also prove of supreme importance to the Canal in time of sudden emergency. No licenses are granted within a mile of army posts and important residential sections of the zone, but unfortunately laborers residing in zone towns exchange visits with these settlers, and it is believed that many cases of malaria among the colored employees and their families have resulted from this practice."

ANTISTEGOMYIA CAMPAIGN IN CARTAGENA

Dr. Henry Hanson, Director General of the Sanitary Campaign Against Yellow Fever in the Republic of Colombia, reports that the antistegomyia campaign in Cartagena is making considerable progress. Sanitary Inspector J. B.Corrigan and Sanitary Engineer G. W. Stuart have been making studies with a view of converting a fish similar to Gambusia affinis from a salt water fish to a fresh water fish. The citizens of Cartagena and the newspapers thereof are cooperating heartily, and it is believed that the city will soon possess a safe mosquito index.

HONDURAS OPENS CENTRAL PUBLIC HEALTH OFFICES AND LABORATORIES

Largely through the efforts of Dr. Agustin Santiago Brizio, the Director General of the Public Health of the Republic of Honduras, Central America, there has been erected at Tegucigalpa a well equipped building containing the offices and central laboratories of the National Health Department. The ceremonies attendant upon the opening will be participated in by provincial and local health officers of Honduras and several other Central American republics. The buildings were to have been dedicated on January 20, 1924, but it has been necessary to postpone the ceremony until a later date.

VISIT OF DISTINGUISHED SANITARIAN

Assistant Surgeon General John D. Long, United States Public Health Service, arrived at Balboa, Canal Zone, on January 7, 1924, en route from Valparaiso to New York, in company with Judge Payne and Colonel Furber of the American National Red Cross. Dr. Long, who has been in attendance at the Pan-American Red Cross Conference at Buenos Aires, was entertained by the Chief Quarantine Officer of the Panama Canal and spent the day in visiting the various sanitary works of the Panama Canal. He sailed for New York on the *Santa Luisa* on the evening of the same day, after discussing the plans for the Conference of Maritime Quarantine Authorities of South American Pacific Ports with President Belisario Porras, the Honorable Dr. Narciso Garay, Secretary of Foreign Affairs, Colonel H. C. Fisher, Medical Corps, United States Army, the Chief Health Officer of the Panama Canal, and Surgeon W. C. Rucker, United States Public Health Service, the Chief Quarantine Officer of the Panama Canal and Secretary General of the Conference.

TUBERCULOSIS SANATORIUM FOR PANAMA

President Belisario Porras and a distinguished official party including Dr. A. S. Boyd, the chief surgeon of Santo Tomas Hospital, have gone to the Valley of the Anton in the interior of the Republic for the purpose of selecting a site for a tuberculosis sanatorium. The altitude at this point is about two thousand feet and the climate is believed to be well suited to the open air treatment of tuberculosis. If the sanatorium is located there, it is planned to connect it with the national roads so that communication with the rest of the Republic will be rendered easy. The Republic is making a strenuous effort to induce the American government to construct a bridge across the Canal and if this is done it will be easy on the completion of the road for an automobile to make the journey from the capital in about two hours.

CHILD HEALTH ASSOCIATION TO STUDY CANAL ZONE CHILDREN

Miss Sally Lucas Jean, directress of the Child Health Association of America, will arrive on the Isthmus in early January accompanied by Miss Emma Dolfinger for the purpose of making an intensive health study of the Canal Zone children. The survey will take about a month and it is expected that Miss Jean will make a report of her findings with suitable recommendations. Present notices state that in the Balboa District of 748 children, 428, or 57.2 per cent., were found to be defective in some way. Of the 428, 54 had faulty vision, 178 defective teeth, 12 defective audition and 116 some nose and throat condition. Two hundred and thirty-three had dental defects of one sort or another. None of these cases were in any way serious but it is desired to discover them in the earliest stages in order that they may receive prompt and efficient treatment.

MEDICAL TREATMENT BY AEROPLANE

Army aeroplanes from France Field which have been making extensive flights into the interior of

Panama have recently completed a successful round trip flight to San Jose, Costa Rica. On one occasion after receiving a telegram to the effect that the wife of an explorer in Chiriqui had been wounded, planes proceeded to the camp where she was, taking with them a physician and a supply of antitetanic serum. After the administration of the serum the lady was brought to the Ancon Hospital for treatment. Had she traveled by boat it would have taken at least three days for her to reach Ancon. Recently a plane flew from David to France Field with a horse weighing six hundred pounds and it is felt that it has been amply demonstrated that by using aeroplanes it will be possible to transport with great ease and rapidity urgent cases from the interior to the hospitals at the capital.

INCREASE IN CANAL TRAFFIC

During the calendar year 1923 more than five thousand ships made the transit of the Panama Canal and paid tolls in excess of $23,000,000. In spite of the fact that these vessels came from all over the world no cases of quarantinable disease have been introduced into the Canal Zone during the year and by reason of the improved methods in quarantine, time losses in ships have reached what is practically an irreducible minimum. With this increased traffic the medical and surgical work of the United States Public Health Service on the Canal Zone has increased very materially. During the year 867 cases were treated in hospitals and 371 in dispensaries, the cost of such treatment amounting to $27,932.

PANAMA CANAL GROWS CHAULMOOGRA TREES

The Health Department of the Canal Zone is now growing chaulmoogra trees and it is hoped that within the next five years the local supply will be sufficient to treat all lepers on the Isthmus. These trees were introduced into the Canal Zone in 1921 when about a dozen young plants were planted at Corozal and Mount Hope. The first yield is expected this year and is being eagerly watched by health officials of the Zone. The tree is not unlike the mahogany in appearance. It is tall and straight, often growing to ten or fifteen feet in height. Its smooth bark has a pale yellowish brown tinge but the branches appear low down and grow at right angles to the tree. The leaf is long, slender and ribbed like the mango or mahogany and the fruit is brown and russet colored and about the size of a large orange. The seeds in this fruit are arranged like those in the pomegranate but are somewhat larger.

HOOKWORM CONTROL IN PANAMA

Dr. Louis Schapiro, addressing the Isthmian Canal Medical Association recently, said that the campaign for the control of the disease is conducted by the Department of Uncinariasis, an official agency of the Panaman Government, in the Ministry of Fomento. Dr. Schapiro, who is the local representative of the International Health Board of the Rockefeller Foundation, cooperates with the Government in order to establish the work on a permanent basis. There are central offices in Panama City with a laboratory for the examination of fecal specimens. There is a field staff of sanitary inspectors and an adequate personnel of laboratory workers, technical assistants and microscopists. A technical assistant, a sanitary inspector and one or more microscopists constitute the unit of operation. The campaign has been hampered by transportation difficulties and has passed a transition type. At first the work was conducted on the dispensary plan. This consisted of an ambulatory unit comprised of a technical assistant and several microscopists. The unit operated for a short time in each area and offered examination and treatment to those infected. The method was soon found to be ineffective because the patients were permitted to take the medicines home with them to selfadminister them if they saw fit. This was changed so that now the drugs are taken in the presence of the technical assistant. The present plan is to select a geographic or political area, map it and make a complete sanitary census after which a public conference is held and privy construction commenced. When seventy-five per cent. of the homes are provided with privies a laboratory census is made. After ten per cent. of the population has been examined, if the infection rate exceeds eighty per cent., treatment is offered to all inhabitants without previous or further examinations. This is the socalled mass treatment. It has been found sound; it certainly reduces the cost of the campaign and eliminates time wastages. All treatments are given in the laboratory, three treatments of chenopodium being administered at ten day intervals. Coincident with the examinations and treatments an educational campaign is carried on.

Up to and including 1922, more than 140,000 persons were examined and an infection rate of 80.4 per cent. was found. Of this group 104,000 received one or more treatment and 78,000 were discharged after two treatments. The infection rate according to race groups shows: Whites, sixty-four per cent.; brown or moreno, ninety-one per cent.; negro, ninety-eight per cent.; and yellow, forty-three per cent. No marked difference in the infection rate according to age groups was found. In the school children of Panama City and Colon the infection was 11.3 per cent. as against 99.2 per cent. in the rural districts.

MOSQUITO PREVENTION PLANT MAY BE NUISANCE

The division of sanitation, of which Dr. D. P. Curry is the chief, has naturally been much interested in the reports of the use of *Chara foetida*, a water plant, in the prevention of mosquito breeding. This particular species is not present on the Isthmus but investigation shows that *Chara foliarosa* is prolific in the shallow lakes bordering the Canal. Apparently this species exerts no inhibitory effect on mosquito breeding. It grows in all shallow lake areas and has proved so troublesome that the municipal engineering division of the Panama Canal has been obliged to remove it by the expensive and tedious process of dragging it out by boats. The plant grows especially fast in the dry season when the water is clearer, shallower and there is more sunshine. It has spread rapidly in the past four or five years and the work of removal must be done almost continuously. Its presence interferes with the use of oil or other larvicides and apparently the anopheles delight to breed in the shallow pools in which it grows, sending up tendrils which mat at the surface of the water to such an extent that larvæ destroying fish cannot penetrate the blanket thus formed. In view of these facts it is believed that *Chara* should not be introduced as a mosquito control measure without further investigation since it is of doubtful value and may grow to an extent which will make it a nuisance.

Book Reviews

GASTROINTESTINAL SURGERY

Indikationstellung für die chirugische Behandlung bei bäsiertigen und gutartigen Erkrankungen des Magens and Duodenum. By Prof. Haberer. Halle: Carl Marhold Verlagsbuchhandlung, 1923.

Haberer prefers the resection of ulcers to gastroenterostomy. Duodenal ulcers in the descending portion of the duodenum, however, especially if adherent to the gallbladder or penetrating the pancreas, do not permit resection and require a gastroenterostomy. Haberer sees no good results from operations for gastroptosis and considers them useless. In callous ulcers the resection is absolutely necessary for in a great number of them the apparently benign ulcer on microscopic examination proves to be already cancerous.

The monograph gives a full description of the author's very rich experience in gastrointestinal surgery.

COSMETIC SURGERY

Die Behandlung der kosmetischen Hautleiden unter besonderer Berücksichtigung der physikalischen Heilmethoden und der narbenlosen Operationsmethoden. Von Professor Dr. E. Kromayer, Berlin. Mit 7 Abbildungen. Leipzig: Verlag von Georg Thieme, 1923.

This brochure contains the author's observations, investigations and experiences in the field of cosmetic treatment of the skin during a period of thirty years. The material is arranged so as to show the results in the various skin diseases with the method of treatment especially indicated, such as röntgenotherapy, radium, light, the technic of operating without the leaving of scars, cauterization, electrolysis, heat, cold and the local applications of drugs. This work is concerned, particularly, with the methods of removing blemishes of the skin cosmetically—without resulting unsightly scars. The latter element of the result is generally not taken into consideration, but certainly deserves to be considered, especially in the patient who is distressed by skin blemishes and is determined to have them removed.

HISTOLOGY

Practical Morbid Histology. Robert Donaldson, M.A., M.D., Ch.N. (Ed.), F.R.C.S.E., D.P.H. With foreword by Sir Humphrey Rolleston, K.C.B., M.D. London: William Heinemann, Ltd., 1923.

The purpose of this book is to present in a concise form the essentials of pathological morphology as they are viewed by the student who desires to get and retain a working knowledge of the more obvious changes caused by disease. The close association in the text of the gross and microscopic pictures is a convenience in teaching, but also limits the scope of both phases of the subject. To divorce the clinical aspects of the case from the postmortem findings seems to remove pathology an unnecessary distance from its place in the practice of medicine, and to inhibit, rather than to stimulate, the students' critical faculties. The book may be useful as a students' manual, however, and could be used in connection with lectures which would greatly amplify and illustrate the text. The language is somewhat colloquial, but entirely clear, and the descriptions so brief as occasionally to do scant justice to the facts, for example, in the description of hemochromatosis and other rare diseases. On the other hand, the material on industrial diseases, e. g., of the lungs, is presented in a concise and interesting manner, and makes available facts which are not fully dealt with in many larger texts. Even to the elementary student the absence of illustrations and of a bibliography might prove a keenly felt defect.

ANATOMY

Quain's Elements of Anatomy. Eleventh Edition. Vol. IV. Part II. Myology. By T. H. Bryce, M.A., M.D., F.R.S. New York and London: Longmans, Green & Co., 1923.

From all intents, this is a new book rather than a new edition. This work will be heralded by many as a contribution to the new school of dynamic medicine. The book is replete with the excellent illustrations which characterized the earlier editions, but most important is the concept of the muscular organism as an entire unit. Morphological descriptions are skilfully united with genetic concepts. A long needed work on anatomy. May its reception be in keeping with its quality.

SHIP SANITATION AND HYGIENE

Manual on Ship Sanitation and First Aid for Merchant Seamen. By Robert W. Hart, Passed Assistant Surgeon, United States Public Health Service. Second Edition. New York: Seamen's Church Institute, 1923.

The second edition of this useful and practical little book contains important revisions of the original text and considerable added material. The aim of the manual is to supply a basis for a more intelligent relationship between masters and men of the Merchant Marine and the Public Health Service, which is the Federal agency charged with definite responsibilities in matters affecting their health and the quarantine of vessels operated by them. Dr. H. S. Cumming, Surgeon General of the Public Health Service, states in a foreword to the volume that "the promotion of a spirit of mutual trust and good will between the American Merchant Marine and the Public Health Service is a matter of vital importance which concerns the entire nation."

The manual is designed to furnish to officers and men of the Merchant Marine a small but comprehensive text book on general ship sanitation and hygiene, and an outline of the common medical and surgical conditions that obtain on shipboard, together with directions for the treatment of diseases and also for the proper care of injuries. There are chapters on anatomy and physiology, the ship's sick bay and medicine chest, medical first aid, surgical first aid, etc. An attempt has been made to include also some practical information on bedside nursing, the use of simple remedies, and instructions enabling the layman to cope with conditions sometimes following serious accidents at sea.

The language is simple and the terms used as nontechnical as possible. Cuts and drawings illustrate the text.

TUBERCULOSIS

Pulmonary Tuberculosis. By JOHN GUY, M.D., D.P.H. (Camb.), F.R.F.P. & S. (Glas.), F.R.C.P (Edin.). OLIVER & BOYD, Edinburgh, 1923; 307 pages.

In the introductory chapter of this textbook the author gives a short historical survey of tuberculosis science from the time of Hippocrates to the present day, and justly gives to Bodington, an Englishman, the priority as a pioneer of the open air treatment. In chapter 2, besides the statistical charts of England and Wales, he gives interesting data on the comparative deathrate in Scotland for the year 1921, according to which it is in the rural districts 68 per 100,000 inhabitants, in small burghs 70, in large burghs 95 per 100,000.

In the description of the tubercle bacillus, nothing new is given, but an excellent picture in color is reproduced. In the chapter on pathology the author describes carefully the four well known methods of the spread of tuberculosis in the lungs: 1, by discharging into a bronchus (aerogenous); 2, by contiguity, that is, gradually spreading into the neighboring tissues; 3, by the lymph stream (lymphogenous); 4, by the blood circulation (hematogenous). The statement is interesting, coming from an Englishman, that forty per cent. of the milch cows in Great Britain are infected with tuberculosis, and he pertinently says that the prevention of distribution of the tubercle bacillus is to be secured by the control of the consumptive patient and the tuberculous cow.

In the chapter on predisposition, the author reproduces the interesting table on comparative mortality in certain occupations, compiled by Collins, which gives the astounding figures that the tin miner is eight times, the cutter five times, the printer three times, the shoemaker and tailor two and one half times, the hosiery operator two times more exposed to contracting tuberculosis than the coal miner or agriculturist. The author gives the well known list of predisposing diseases and tries to explain the frequency of the lesion in the apex by a stenosis of the upper thoracic aperture, which in turn causes lessened respiratory effort, diminished blood supply, and a comparative lymph stasis.

The physical examination of the patient is treated thoroughly in this book and an unusually large number of excellent photographs of patients stripped to the waist illustrate the value of careful inspection and method of palpation. Under special tests, the author describes the sputum albumen reaction, the exercise or autoinoculation test, the opsonic index test, and the various tuberculin tests. It is surprising that the author should have devoted nearly ten pages to the description of these various tests the majority of which he himself admits to be unreliable. Albumen is found in the sputum of patients suffering with bronchiectasis or abscesses of the lung, and in the early stage of tuberculosis albumen is rarely found in the sputum. That the autoinoculation test is unreliable one can see if he thinks of the many factors which may cause a rise or an irregularity of temperature even in a healthy person. The opsonic index test is equally unreliable because of its many chances of error, and the complement fixation test is difficult because of the procuring of a suitable antigen. Dr. Guy favors the intradermal test of Mantoux and von Pirquet, but with all modern investigators he admits that the reaction means an infection and nothing more.

Some very excellent x ray pictures complete the chapter on diagnosis. The symptoms for differential diagnosis, such as are observed in bronchitis, asthma, bronchiectasis, empyema, abscesses, gangrene, neoplasms, and mitral stenosis, are carefully described, and so are the frequent complications of pulmonary tuberculosis.

Under tuberculin therapy the author confesses that, according to his own experiences, the value of tuberculin as a remedial agent is "not proven." Under symptomatic treatment, nothing new is offered, but it is rather surprising to see the number of drugs mentioned in the treatment of hemoptysis which, as is well known, are, with the exception of morphine of no use. In his chapter on artificial pneumothorax, the author very wisely recommends that when large quantities of gas are not tolerated well, smaller quantities of about three hundred c. c. may be injected every two or three days until a total collapse is obtained. When this is reached, a positive pressure of five to ten c. c. is sufficient to maintain it. In the author's description of climatic treatment, he expresses himself rather favorably on marine climates as particularly suited for emphysematous patients and those with chronic bronchitis. This is a rather surprising statement, for chronic bronchitis usually does a great deal better in high and dry climates.

The last chapter is devoted to sanatorium treatment in institutions and at home. Dr. Guy wisely refrains from discussing the comparative merits of the treatment at home or in a sanatorium and well says that the two are complementary, because as proved by statistics, the majority of patients must be treated at home, the home treatment should be considered as most important in the tuberculosis problem. Aside of the few slight criticisms, the book is well written and well printed and constitutes a good handbook for students and general practitioners, which is all the talented author claims for his work.

THE UNCONSCIOUS

The Unconscious. By ISRAEL LEVINE, M.A. New York: The Macmillian Co., 1924.

A sketchy survey of the unconscious, historical and from the time of Freud. The workers previous to Freud are dismissed a bit casually perhaps for fear that the master will not receive adequate due. There scarce seems need for this. The résumé of the work done by Freud and the psychoanalytic school is fairly well done. As to the advisability of classing this book as a general introduction to psychoanalysis, there is grave doubt. Freud has written a fairly good "general introduction" and this book does not in any way supplant it. Just what function Levine's book fulfills is difficult to state. It is made up from a series of quotations selected from various workers in the psychoanalytic field and why Levine's judgment should be any better than that of any other reader is somewhat vague.

There are no short cuts to so important a subject. It seems of far more value at present to contribute something than rehash a subject during its period of adolescence. However, there are certain types of mind that must have an outlet. The college professor insists on going through the literature and selecting what he thinks best. So be it.

THE NARRATIVE OF A WOMAN PHYSICIAN

Beginning Again at Ararat. By Mabel Evelyn Elliott, M.D. New York and Chicago: Fleming H. Revell Co., 1924.

The chronicle of a modern Florence Nightingale is perhaps the best way to characterize this remarkable human document. For four years Dr. Elliott has been one of the prominent members of the American Women's Hospital's personnel in the Near East. This book is her account of those years of life amid almost unspeakable horrors and of the methods of relief undertaken by herself and the other Americans working with her. Of them she writes, "Every American who went to the Caucasus was a hero. Of myself I do not speak . . ."

Dr. Elliott's experiences in the Near East, as recounted in her book, were divided into three distinct periods. First, she tells the story of her hospital at Marash in Central Anatolia, and of the medical relief work done there for the population during occupation by the French army, of the long siege by the Turks, of the midwinter evacuation, and subsequent march through cold and snow, without provisions, on which she accompanied the evacuated populace. Her next post was Ismid, near Constantinople, where she was instrumental in establishing a hospital with one hundred ward beds, a clinic and a nurses' training school. No sooner was the organization in good running order than the Greek ococupation yielded to the Turkish, whereupon the hospital sent away almost all its nurses with the evacuation, but Dr. Elliott remained and kept the institution open several months longer under Turkish rule of the city. Her next work was in the Caucasus, where she organized and directed hospitals for the Armenian refugee children. Her record closes with the account of this tremendous task, during which she had to cope with the results of war on a vast scale. Dr. Grace N. Kimball, president of the Medical Women's National Association, tells us in a prefatory appreciation of the book, that Dr. Elliott, as many know, answered a later call to service and hurried back to Constantinople to do relief work following the Smyrna tragedy and the horrors of the evacuation of Anatolia.

The book is full of most interesting medical material. One of Dr. Elliott's posts was that of head of a home for Armenian girls released from Turkish harems. "The things I heard were unbelievable," she writes. "A doctor sees more deeply into the abysses of human society than any other person except a priest, but I knew only America. This was Asia, strange, bestial, incomprehensible. It was my first encounter with such things—the things that human beings can do, carelessly, without rancour, laughing, to other human beings. It was incredible, too, that these girls could have seen and endured them, and survived to sit there telling of them. The stories did not vary greatly; the variety was in the revealed temperament of the girls." One of the most vivid parts of the narrative is the diary of the siege of Marash, kept by the author, and the account of the three days' flight from the city through winter snows with five thousand Armenians, of whom perhaps one third lived to reach their destination. The marvel is how Dr. Elliott, under such circumstances, was able to keep any record at all of her experiences and splendid work. The accounts of the medical work with the Turkish women and in the orphanages in the Caucasus are equally interesting.

The book is simply, directly and forcefully written. On not a single page does the reader's interest lag. Perhaps the most striking characteristic of the narrative is that it is told with such a tremendous modesty. In it we see the spirit of one who has passed forever beyond the personal and is one with mankind as a whole. Courage, too, never fails her, either under the enemy's fire or in speaking her convictions. "The Turk is a barbarian," she writes. "In seven hundred years, he has learned nothing from the civilization of Christian Europe. But what are the lessons that Christian Europe has set him to learn?" The book contains many penetrating, practical and revealing political comments, as well as interesting and delightful descriptions of places and peoples.

TIGHTROPE PSYCHOLOGY

Outline of Psychology. By William McDougall. New York: Charles Scribner's Sons, 1923.

McDougall is a man of learning, a man in a most responsible position. He knows what is needed in the literature of psychology. He realizes how befuddled psychologists of the old school have been. He senses the sweeping on of the new virile school of psychology and has a wondrous knack of synthesizing his knowledge and presenting it in attractive form. From him we should expect a truly great book on psychology.

For these, and many other reasons, his present volume is a keen disappointment. Replete, it is with material most of which is good and then—confusion. Temporizing; definition upon definition without a clearcut one among them. Not one that is not as weak as near beer. Perhaps McDougall is apprehensive that the eighteenth amendment may apply to psychology. Granted that anything concise and clearcut is an anathema to the university psychologist, is it not a high price to pay for popularity to trim ones sails under these conditions? Alas, we fear we shall have to put this book among the many others which are handed "down" to the student of psychology. Others will come and soon. Yet we are disappointed when we had expected as much from McDougall. The opera singer with the glorious voice singing jazz for *hoi polloi.*

ROCKEFELLER INSTITUTE STUDIES

Studies from the Rockefeller Institute for Medical Research. Reprints. Volume XLVI: New York, The Rockefeller Institute for Medical Research, 1923.

This bulky collection of reprints represents the activities of the Rockefeller Institute for Medical Research during the past year. To those who have not followed the work as it appeared month by month in various publications, the present volume will be especially interesting. The reprints embrace studies on pathology and bacteriology, biophysics, chemistry, experimental surgery, general physiology, and animal pathology, and as an evidence of the extremely wide scope of the scientific investigations which are being carried on at the Rockefeller Institute for Medical Research.

Medicoliterary Notes.

Mental Health is the title of a leaflet which the Mental Hygiene Society of Maryland has recently begun to issue. The editor is Dr. Charles B. Thompson, consultant and executive secretary of the society. The purpose of this little publication is to furnish information to the lay reader and to the public at large on the principles underlying mental hygiene.

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The former crown prince of Germany admits, in a letter to his former teacher, Professor Zorn, quoted in a recent issue of the *Living Age,* that "thinking has gradually become a habit" with him.

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The General Assembly of Pennsylvania, during its session of 1923 passed an act known as the Bedding and Upholstery Act, which provides for the inspection and tagging of all mattresses, pillows, bolsters, feather comfortables, cushions, and other articles of upholstery.

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A recent issue of the *New York Medical Week* praises the Joint Legislative Committee under Senator Cotillo's leadership for the real service it is performing in investigating the robbery of immigrants by various agencies. "The dishonest medical advertising in papers published in the foreign languages," says the editorial, "is the crux of this whole rotten system. . . . Only if this is eliminated can the situation be bettered. If the Cotillo investigation will result in effective legislation against such advertisements, it will indeed have accomplished a great part of its purpose."

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The Expert Witness is the title of a recent English publication, of which C. Ainsworth Mitchell is the author. It deals with the application of science and art to human identification, criminal investigation, etc. The author is an expert on handwriting, finger prints, and kinds of ink, and has besides the literary ability to make his book intensely interesting and at times thrilling.

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Carl Hookstadt, writing in a recent number of the *Monthly Labor Review* on the number and cost of industrial accidents in the United States, estimates that the annual cost of such accidents in this country is $1,023,104,435, plus at least $75,000,000 for medical and hospital service, to which should be added the administrative expenses of compensation commissions and insurance companies, and the indirect effect upon production.

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The Schoolmaster, an English magazine, publishes some amusing answers to examination questions. One girl wrote that the Roman numerals LXX stand for "love and kisses." Another, answering the question, What discovery was due to the falling of an apple? replied "the wickedness of Eve."

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The Detroit Public Library has opened a medical branch. The books forming the collection were formerly the property of the Wayne County Medical Society, which last winter requested the public library to take over the collection and house, organize and manage it for the future.

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Scientific men serving with the British forces in Mesopotamia have been able to study, collect and even preserve specimens of fauna, sometimes under fire, as is shown by a volume recently published by the Natural History Society of Bombay on the fauna or Iraq. The book reports that some of the specimens were captured close to the enemies' lines, and many were caught within artillery range. A colonel caught and skinned a shrew while under shell fire.

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The Chicago Health Department reports that, out of 56,724 births occurring in 1922, not a single case of blindness has developed. This, they state, was due to the physicians, midwives, hospitals, and the Illinois Society for the Prevention of Blindness, cooperating with the Board of Health.

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A musical review states that there is only one man in the world who can read the scores of Puccini's operas, which are practically illegible. This man is employed by the publishers of Puccini's scores in Milan, who, it is reported, are using this fact to make it very uncomfortable for the great musician, who is engaged in a lawsuit with them.

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A method of disinfecting hides and skins with iodine for anthrax is described in detail in an article by Dr, Henry F. Smith and Edwin F. Pike, both of the University of Pennsylvania, in a recent number of the *American Journal of Hygiene.*

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The Gaol, a novel by Paul Bourget, soon to be published by Brentano, is a story of the influence of heredity, from which the hero is depicted as being unable to escape.

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Dr. Edward J. Kempf, in an interview published in a recent issue of the Sunday New York *Times,* is quoted as making a special plea for vocational schools as an aid in the care and treatment of the mentally diseased, of whom he considers eighty per cent. curable.

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The Real Sarah Bernhardt, by Mme. Pierre Berton, with illustrations from rare prints and photographs, is announced by Boni & Liveright for publication in February. It is said that this biography will reveal phases of the great actress' life and character known only to her intimates.

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The Department of Information and Statistics of the National Committee for Mental Hygiene is preparing a study on the use of alcohol in relation to mental disease. This article contains social facts concerning patients admitted to ninety-six hospitals in this country during the year 1922, and shows the decrease in this form of mental disease during recent years. It aims to correct some current fallacies concerning the effects of prohibition on mental disease. It will be published in the *American Review.*—*Mental Hygiene Bulletin.*

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French colonists in tropical Africa are losing their fear of the tsetse fly, which transmits the germ of the sleeping sickness, and it is expected that in a few years the dangerous character of this insect will be a legend. The pest is being fought with a tropical plant, Melinitis multiflora, the pungent odor of which the fly is unable to stand. The peculiar qualities of this plant first came to the attention of the settlers through its use by the natives in the sleeping quarters of their fowls and domestic animals. Its odor is so strong that the natives are unable to stand it in large quantities, but it is said to be pleasing in small quantities. The plant grows riotously in various parts of the Ivory Coast Cameroon, Portuguese Congo, and Madagascar.—*Medical World.*

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The Claims of the Coming Generations, edited by Sir James Marchant, Secretary of the British National Birth Rate Commission, is one of Dutton's recent publications. The book is a collection of articles by authorities on the care and training of children. Among contributors are Dean Inge, of St. Paul's, London, who writes on the right to be well born; J. Arthur Thomson, who discusses sex education; Dr. Mary Scharlieb, whose subject is the moral training of the modern girl, and Sir Arthur Newsholme, who writes on improvement in child welfare.

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In the book review section of the February 6th issue of the JOURNAL Richard G. Badger, of Boston, was credited with publishing *Der Fetischmus* by William Stekel. This is an error, the publishers being Urban & Schwarzenberg, of Berlin and Vienna.

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What is believed to be the first instance in England of an alliance between a general hospital and a special hospital for the care of mental disease is a scheme recently approved whereby the Middlesex Hospital has opened two new wards, for men and women respectively, for the treatment of functional disorders of the nervous system. . . . Both hospitals share funds, materials, and experiences and service of the staff as may be necessary. The resources of the general hospital in the nature of special examinations, medical and surgical treatment, and the like are available for the patients.—*British Medical Journal.*

Abstracts from Current Literature

GASTROENTEROLOGY

Duodenal Enzymes in Chronic Ulcerative Colitis.—Philip W. Brown (*Medical Clinics of North America,* July 1923) states that the enzymatic activity of the duodenal contents in cases of ulcerative colitis has been reported as high. In active cases this enzymatic activity is more marked, and, conversely, it is decreased as the condition subsides. There is evidence that a normal enzymatic activity may exist in the presence of chronic pancreatitis. It is important to note that the activity, not the amount of the enzymes, is estimated. Furthermore, the results should be expressed in the general terms of proteolytic or amyolytic activity, and not as due only to trypsin or amylopsin. One case of ulcerative colitis demonstrated that the enzymatic activity at the ileocecal valve is practically as powerful as it is in the duodenum. This explains the skin digestion in the patients with ileostomy, and may be the factor causing the ulceration, if a decreased resistive power in the colon wall is assumed.

Gastroduodenostomy versus Gastroenterostomy in the Treatment of Chronic Duodenal Ulcer.—E. R. Flint (*Lancet,* September 8, 1923) believes that gastroduodenostomy can be done in ninety per cent. or more of cases of duodenal ulcer, and that gastroenterostomy is necessary in less than ten per cent. of cases of chronic duodenal ulcer. The risk to the patient with gastroduodenostomy is no greater than it is with gastroenterostomy. The occurrence of an ulcer at the line of the anastomosis after gastroduodenostomy is unknown, whereas it does occur in at least two per cent. of cases after gastroenterostomy. In a small percentage of cases it is also impossible to do posterior gastroenterostomy, either because of a small stomach in a fat patient, or because the lesser sac, or that part of it which is required for the operation, is obliterated by adhesions. Anterior gastroenterostomy is then usually done, and this is not a desirable operation.

Etiology of Gastric and Duodenal Ulcer.—George E. Ebright (*California State Journal of Medicine,* October, 1923) believes that, in the light of the work of Rosenow and others, upon the possibility of the bacterial origin of gastric ulceration, it is of the utmost importance that infections, especially chronic focal infections, be borne in mind. While the teeth and tonsils and intestines rank first as offenders and should receive the most painstaking attention, it is necessary to remember the possibility of chronic processes in the accessory sinuses of the nose, the middle ear and mastoid, the uterine cervix and fallopian tubes, prostate, gallbladder, and appendix. He also believes that it is correct to consider two kinds of causes of gastric and duodenal ulceration, namely, exciting and predisposing, that predisposing factors are usually remote, such as constitutional diseases and focal infections; that exciting causes may be dietary indiscretions, acute infections, and psychic disturbances leading to the condition which is commonly recognized as nervous indigestion. Without emphasizing the latter unduly, it may be stated that alterations in the physiological functions of the stomach and duodenum due to nervous influences are a frequent cause of ulceration.

Cause of Death in Intestinal Obstruction.—As a result of his experimental work. Seton Pringle (*Lancet,* July 14, 1923) draws the following conclusions: 1. The principal factor in causing death in intestinal obstruction is a toxin which is developed chiefly in the duodenum, and, although it is not absorbed from the normal intestine, it is absorbed under the conditions which prevail in obstruction. 2. The exact chemical composition of the toxin is still under dispute, but it is almost certainly of the nature of one or other of the toxic bodies derived from protein disintegration. 3. The exact mode of production of the toxin is also undecided, but probably the presence of pancreatic secretion, and, in a lesser degree, the activities of bacteria are necessary for its production. 4. While the duodenum is the site of maximum toxicity in obstruction, yet the poisonous substances are developed lower down in the intestine, and it is probable that in the production of these toxins bacterial action plays an important rôle—a rôle which increases in importance the lower down the obstruction occurs.

The author believes that three factors are at work in acute peritonitis: 1, shock; 2, septic absorption from the peritoneum, and 3, toxemia from the intestine, the involved part of which is generally in a condition of paresis, producing obstruction. He has saved cases which were seemingly quite hopeless by not only using morphine and saline glucose infusions to combat the shock and toxemia, but also by attacking directly the source of the toxin by means of an enterostomy high up in the small intestine, after the manner of Witzel's gastrostomy. A No. 12 soft rubber catheter is inserted into the lumen of the intestine through a small puncture and fixed in position by a single catgut stitch, the next two inches are buried in the intestinal wall by a continuous infolding stitch, and the proximal end is passed through a hole in the omentum, as described by Mayo, before being brought out through the abdominal wall. To the end of the catheter a long tube is attached to drain into a bottle beside the bed.

Kymographic Studies of Various Pathological Conditions of the Stomach.—Leo L. J. Hardy and Edward G. Joseph (*Medical Clinics of North America,* July, 1923) compared and classified the changes in gastric motility and intragastric tension with the aid of the balloon and kymograph for the purpose of diagnosing pathological conditions. One hundred and twenty kymograms were classified into three characteristic groups: 1. The peristaltic waves may be diminished, as is also the tonus rhythm, in a large percentage of these patients having duodenal ulcers with positive röntgenograms. 2. The peristaltic waves may be more active and the tonus rhythm accentuated, and, in striking contrast to the group 1 cases, the greater number of these patients are either normal or have reflex gastric symptoms. 3. The peristaltic waves are greatly increased and the tonus may or may not be correspondingly intensified; this is a small group, too small from which to draw any conclusions. The few kymograms which showed diminished intragastric tension were found to belong to those patients who had been suffering from marked general debility and asthenia. The effect of the alkaline treatment for duodenal ulcer on gastric motility causes marked diminution of the various motor activities of the stomach, although intragastric tension remains within normal proportions. The action of belladonna produces effects similar to alkaline treatment. In regard to the factors concerned in the etiology of gastric pain, the results emphasize the view that peristalsis and increased intragastric tension are of primary importance in the causation of pain. The experiments with belladonna lead to the belief that there may be something besides peristalsis and an adequate acidity necessary to the production of pain. It is suggested that the afferent sensory mechanism may be inhibited independently of the peristalsis and tonus variation.

Some Etiological Factors in Appendicitis.—A. C. Guillaume (*Gazette des hôpitaux,* September 22, 1923) states that, when only cases in which the appendix shows lesions justifying the diagnosis of appendicitis are taken into account, the ratio of cases in males to cases in females is at least seven to three. In grouping cases according to severity of the appendix lesions, one finds severe lesions uncommon and mistakes frequent in women, whereas in men severe lesions obtain in a majority of the cases and only a few of the lesions are questionable. Lack of results from appendectomy and return of pain after the operation is far more frequent in women than in men. Among the patients unimproved by appendectomy there are many in whom colic and pericolic lesions have been observed at the operation and stasis disturbances after the operation; among these cases medical treatment yields a considerable proportion of cures or cases markedly improved. Careful examination of patients, particularly with the x rays, permits of the elimination of at least eight out of ten of the cases in which the diagnosis of chronic appendicitis is ordinarily made. Examination under fluoroscopic control shows that the points of tenderness attributed to the appendix are in reality located over the ascending colon; that the appendix is not tender and is movable and permeable, and that there are present intestinal and periintestinal lesions, such as mobile and ptotic cecum, cecal atony and pericolitis, quite sufficient to explain the patient's symptoms. The age of election for appendicitis appears to be between seventeen and twenty-eight years. Out of 109 cases sixty-eight were in this

range, ten were below seventeen years, and thirty-one were above twenty-eight years. Comparative study of the frequency of constipation and of appendicitis at different ages suggests that constipation is not a factor in the causation of appendicitis. Among appendicitis cases constipation seems to be less frequent than among normal subjects. In forty out of forty-nine cases of acute appendicitis there was no history of disturbed intestinal functions and no sign suggesting abnormality of fecal transit. In forty-one cases, moreover, there was no history of pain, and of the eight patients who had had pain, six were among those who had had diarrhea or constipation. Thus, only eleven patients had had the symptoms—intestinal functional disturbances or pain—which are generally regarded as significant of chronic appendicitis. All the other patients had been in excellent health. Contrary to general opinion, it seems improbable that chronic appendicitis is the basis on which acute appendicitis commonly develops. On the other hand, a number of cases of acute appendicitis, in which no operation was performed, leave behind them disturbances which can be designated as chronic appendicitis. The most severe lesions of the appendix seem to be produced in the first attack of acute appendicitis. In patients operated upon after the second or third attack, the appendiceal lesions were, on an average, much less pronounced than when operated on in the first attack.

Pancreatitis and Its Association with Cholecystitis and Gallstones.—Gilbert Barling (*British Medical Journal*, April 28, 1923) maintains that it is unlikely that fluids may find their way from the duodenum into the bile and pancreatic ducts. It should be remembered that infection may easily spread from the gallbladder down the bile ducts, thence by the pancreatic duct into the pancreas, and that inflammatory processes in the head of the pancreas may compress the ampulla and the terminal portions of the common bile duct and pancreatic duct, producing obstruction to the flow of secretions into the duodenum, causing also some damming of these secretions in the ducts and giving rise to jaundice. He believes that the dominating factor in practically all cases of pancreatitis is infection from the biliary passages, usually, but not necessarily, associated with gallstones. Thrombosis and other factors, such as the adrenals, may play a part, but the presence of infection is the important matter. The most favorable circumstances for the regression of bile into the pancreatic duct would appear to be the impaction of a small stone in the lower end of the ampulla, but in four of the author's cases in which this occurred there was no pancreatitis present. Infection of the biliary passages starts in and from the gallbladder, and is probably an excretory one through the liver. Pancreatitis may range from an intense fulminating widespread condition which kills in a brief period through a gradually descending scale of intensity to a limited dense patch in the head of the organ, producing symptoms mainly of obstruction to the common duct, difficult to discriminate clinically in some cases from carcinoma, and distinguishable occasionally from carcinoma by microscopic examination only.

Mode of Action of Vitamines.—From observations on the pathological lesions induced by vitamine deficiencies, W. Cramer (*Lancet*, May 26, 1923) believes that a mass of evidence has gradually accumulated which points to the digestive tract as the key to the problem of the mode of action of these food accessory substances. The functional integrity of the digestive tract is dependent on the presence in the food of certain substances with specific drug like actions, much in the same way as the functional integrity of the uterus is dependent upon a hormone produced by the ovary. These accessory food substances may therefore be looked upon as food hormones. Two groups with different specific actions can at present be distinguished. One group, now called the water soluble vitamine B, has a stimulating effect on the lymphoid tissue; the other group, now called the fat soluble vitamine A, has a specific stimulating effect on the intestinal mucous membrane, and also directly or indirectly on the formation of blood platelets. These specific effects afford an adequate explanation of the general changes produced in an animal by restricting or completely withholding vitamines from the food. An interesting relationship is thus brought out between an animal and its environment; the food itself contains specific substances on which the integrity of the apparatus responsible for the digestion and absorption of food depends.

The Large Mononuclear Index in Chronic Appendicitis.—L. O. Dutton (*Journal of Laboratory and Clinical Medicine*, April, 1923) carried on under routine conditions a study to determine the value of an increased mononuclear count as a diagnostic aid. In this series of fifty-two cases of chronic appendicitis, about fifty per cent. showed an increase in the mononuclear count. To determine whether a mononuclear increase was to be taken as evidence of an appendiceal lesion, seventy-seven acute cases were studied, which showed only fifteen per cent. with an increase in the mononuclear count. The increase, therefore, is probably not due to the mere presence of an infected appendix, but to the character of the infection (chronic). To find out whether a mononuclear increase was selective for a chronic infection of any site rather than of the appendix only, cases of salpingitis and cholecystitis were studied, showing 30.5 and 46.6 per cent., respectively, with a mononuclear increase over five per cent. Hence the diagnostician should not rely too heavily on the findings of increased mononuclears as a sign of chronic appendicitis, but should bear in mind the possibility of at least two other conditions (chronic salpingitis and chronic cholecystitis) giving the same blood picture.

Experimental and Clinical Observations on Peritonitis.—With the aid of animal experiments L. Schönbauer (*Wiener klinische Wochenschrift*, May 24, 1923) was enabled to show that the subcutaneous tissue resorbs more rapidly than the peritoneum and that the former's powers of resistance against pathogenic germs (anthrax bacilli) is also greater. In this it does not depend upon the number and virulence of the germs only, but upon the extent of the surface over which they are distributed. On the other hand, the capacity for transudation is much greater in the peritoneum than in the subcutaneous tissue and the bactericidal power of the peritoneal transudate is—in so far as the experiments showed—greater than that of the subcutaneous pus.

Clinically, the great surface of the peritoneum should always be taken into consideration, which usually becomes effective with one blow against the invading bacteria. The first requisite is to occlude the portal of entry so that the peritoneum is not overwhelmed. Irrigations with pepsin hydrochloric acid have been found to be useful. Success can be expected from drainage only in the cases where not entirely clean wound surfaces have been left behind in the abdomen. According to the results obtained in the animal experiments, intravenous infusions of salt solution following the operation should be avoided and subcutaneous infusion or the drop enema should be used in its place.

Jaundice in Surgical Cholecystitis Without Stones.—Howard R. Hartman (*Medical Clinics of North America*, July, 1923) states that jaundice in surgical cholecystitis is often erroneously diagnosed as cholecystitis with stones or obstruction of the common duct. The pain, its character, location, and degree, followed by jaundice, leads one to error. The etiology of the jaundice is explained by pancreatitis as definitely as the surgeon is able to determine, and the pain usually by pancreatic colic. All disease of the gallbladder is a panbiliary infection. Removal of the gallbladder frees the patient from a part of the pathological process, but never does it remove all the pathological processes. At present, surgery is the rational treatment, because it removes a mass of infected tissue and automatically makes possible an augmentation of resisting powers to the residual infection. The necessity of removing the primary foci cannot be overlooked.

Calcium and Phosphorus Balance under the Influence of Water-Soluble, Fat-Soluble and Lipoid-Soluble Accessory Food Substances.—P. Rupprecht (*Monatsschrift für Kinderheilkunde*, July, 1923) ascribes the power of increasing the retention power of calcium to the juice of carrots, to codliver oil, and also to the extract of milk deprived of fat. In carrot juice this power is destroyed by heating it to 130° C. in an autoclave, but this is not the case with codliver oil. In regard to the extract of milk deprived of fat, this question is still undecided. The action of the carrot juice and of the codliver oil is independent of the simultaneous presence of other special foodstuffs. It is impossible to ascribe to butter fat any power of increasing the retention of calcium. Attempts at activating the butter fat factor, the factor-A of the American authors, by the addition of vitamines B and C, were without results.

Duodenectomy, with Report of Experiment Four Years After Operation.—Frank C. Mann (*Journal of Laboratory and Clinical Medicine,* May, 1923) removed the duodenum from a dog which remained in perfect health and maintained its normal weight for four years after the operation, at which time it was killed. The continuity of the gastro-intestinal tract was maintained by an end to end anastomosis of jejunum to stomach. The first portion of the jejunum thus assumed the position normally occupied by the duodenum. The common bile duct and pancreatic ducts were transplanted into this transposed portion of the jejunum at approximately the same distance from the pylorus and from each other as they occurred normally. The experiments prove that in the dog the duodenum is not essential to life or good health, and that whatever function it may have can be compensated for by the remainder of the intestinal tract. It also shows that the transplantation of the bile and pancreatic ducts can be carried out successfully so that the respective glands will remain practically normal for a long time.

Treatment of Duodenal Ulcer.—Berkeley Moynihan (*Lancet,* March 31, 1923) states that ninety per cent. of patients on whom a gastroenterostomy was done are cured and the rest are greatly improved. Jejunal ulcers are very diffcult to treat and the author does not know of a single patient who was permanently cured by medical treatment. The following operations may be done: 1, excision of the ulcer with local repair of the anastomosis; 2, excision of the ulcer with closure of the anastomosis; 3, excision of the ulcer, closure of the anastomosis and the establishment of a new anastomosis, anterior or posterior; 4, excision of the ulcer, closure of the anastomosis and a gastroduodenostomy; 5, gastrectomy; and 6, jejunostomy. The prejudice against gastroenterostomy is due to the fact that it has been done indiscriminately, as the results in suitable cases are most excellent. In the aftertreatment of these cases smoking should be interdicted as it is very injurious; many socalled attacks of duodenal ulcer are due to nicotine poisoning.

Etiology of Gallstones.—Symmes F. Oliver (*Journal of Laboratory and Clinical Medicine,* January, 1923) offers the following explanation in cases of gallstones and obstructive jaundice: A disturbance in bile salt secretion and excretion occurs, manifested by an increase in bile salts in the urine and blood and a decrease in the bile salt content of the bile. As a result of the deficiency in the bile salt content of the bile, cholesterin tends to settle out of solution. If the condition is not early remedied, gallstones form the end result of this physicochemical disturbance. Further, the increase in bile salts in the blood leads to toxic changes in other organs, notably the kidneys and heart, and also profound constitutional disturbances of a toxemic nature. In all cases of cholemia, hepatic insufficiency is present. Following operation, the urine becomes normal usually in six to eight days, while the bile reaches normal limits in ten to fourteen days. Finally, cases of this character should be so treated as to restore the bile, urine and blood to their normal physicochemical state.

Treatment of Liver Abscess by Aspiration.—Philip Manson-Bahr, George C. Low, J. J. Pratt and A. L. Gregg (*Lancet,* May 12, 1923) draw the following conclusions: As regards diagnosis: 1. Liver abscess may often be present when scarcely suspected, and may exist in the absence of all suggestive laboratory tests (leucocytosis, pyrexia, the ascertainable presence of Entameba histolytica) and therefore aspiration should be done in case of doubt. 2. A definite leucocytosis may be absent, but even if present, it is not usually high. 3. Pain in the right shoulder may be the most prominent symptom. 4. Liver abscess may exist in the absence of any pain or tenderness referable to the liver area. 5. Entamebæ may or may not be demonstrable in the aspirated pus; their absence or the inability to demonstrate them microscopically does not negative the diagnosis of amebic abscess; neither can these organisms be demonstrated in the feces in every case. 6. X rays may be of considerable help in the diagnosis; immobilization or stretching of the dome of the diaphragm should be regarded as a valuable positive sign. As regards treatment: 1. General anesthesia is not always required, and aspiration may be done successfully sometimes under local anesthesia. 2. All available pus should be aspirated at one operation. 3. Aspiration is followed by a great sense of relief and shock does not occur. 4. Reaccumulation of pus does not usually occur, but if it does, aspiration may be repeated and result in cure. 5. This treatment can be carried out in general practice. 6. The injection of emetine into the abscess cavity is not advisable, but the patient should be treated with large doses of emetine bismuth iodide by mouth.

Pathogenicity and Treatment of Flagellate Dysentery.—Harold E. Whittingham (*British Medical Journal,* May 12, 1923) emphasizes the following facts: 1. Flagellate dysentery is a pathogenic condition which, if allowed to persist, will eventually undermine the health of the patient and cause neurasthenia. 2. Certain cases are simply carriers, as are also some cases of Entameba histolytica infection. This in no way proves their nonpathogenicity. Such carriers are a great source of danger, inasmuch as they may infect others, especially in a military service where the subjects are likely to be drafted overseas. 3. Contrary to what is usually stated, flagellate dysentery may be cured in at least fifty per cent. of the cases. Stress is laid upon the advisability of the combined treatment by purgation, thymol, emetine bismuthous iodide and lavage of the colon. 4. All cases of recurrent diarrhea or neurasthenia for which no cause can be found, and in whom flagellates can be detected in the stools, should have a course of treatment as outlined above.

Ulcer of the Rectum.—Walter Zweig (*Wiener klinische Wochenschrift,* April 26, 1923) states that the prognosis of ulcer of the rectum seems to be favorable as a rule. However, perforations and fatal endings have been reported. The treatment consists of the use of rectal injections of gelatine or of one-hundred grams of warm olive oil mixed with a tablespoonful of dermatol. In a few cases favorable results were achieved with touching of the ulcers with a one to one thousand adrenalin solution. The calcium chloride therapy, which gives excellent results in hemorrhoidal hemorrahges, does not seem to be indicated in simple hemorrhages from ulcers, as it readily leads to tenesmus and pain. Rectoscopic examinations are absolutely necessary, as often these cases are mistaken for hemorrhoids. Besides, the differentiation between ulcer of the rectum and hemorrhagic proctitis can be made only with the rectoscope and only in this way can the suitable treatment be instituted and the proper prognosis established.

NEUROLOGY.

Treatment of General Paralysis by Malaria.—W. L. Templeton (*British Medical Journal,* May 26, 1923) states that the principle of this treatment depends upon the fact that remissions in chronic disease may occur after an attack of an acute specific fever. The method consists in the withdrawal of from two to four c. c. of blood from the vein of a patient suffering from benign tertian malaria in the febrile or afebrile stage and in its subcutaneous injection into the subject of general paralysis, in whom typical attacks of malaria will develop within about a week. He is allowed to have ten or twelve such attacks, when the malaria is cured by the administration of quinine in doses of 1.0 gram for three days in succession; then in doses of 0.5 gram for fourteen days. The malaria usually clears up after the first few doses of quinine. Following upon the febrile attacks and going parallel with the quinine treatment, weekly doses of neosalvarsan are administered intravenously, commencing with 0.3 gram; six doses in all are given, in the scale of 0.3, 0.4, and four of 0.6 gram. In general the histological changes in cases which had shown remission under malarial treatment were those of the socalled stationary paralysis, with an almost complete absence of the changes usually found in progressive general paralysis.

Technic of the Specific Antiserum Treatment of Epidemic Cerebrospinal Meningitis in Narrowing of the Ventricles of the Brain.—K. Lewkowicz (*Monatsschrift für Kinderheilkunde,* April, 1923) states that in severe cases an uninterrupted action of the serum in the ventricles must be provided for in order to achieve a therapeutic effect. If the ventricles are narrowed as a result of edema, not even daily repeated injections even in bilateral application through temporal puncture suffice, because in such cases the serum is washed out from the ventricles very soon by the current of the cerebrospinal fluid. Several intraventricular injections during the day are necessary to get therapeutic results in severe cases.

Importance of Protein Hypersensitivity in the Diagnosis and Treatment of a Special Group of Epileptics.—R. L. Mackenzie Wallis, W. D. Nicol and Maurice Craig (*Lancet,* April 14, 1923) conducted hypersensitivity tests with five groups of proteins to determine the possibility of food poisons or food susceptibility as a factor in the etiology of certain forms of epilepsy. They used the following groups of proteins: 1, egg proteins; 2, meat and fish proteins; 3, the milk of various animals; 4, vegetable proteins; 5, cereals. The question of the best time to do these tests is of the greatest importance. The test succeeds best when the patient is not fatigued, that is, just before an epileptic attack or as long an interval as possible after the previous attack. In private practice the ideal method of treatment is to remove the offending protein or proteins from the patient's dietary, and, if possible, to desensitize the patient by the administration of protein vaccines in small and graduated doses.

Of one hundred and twenty-two epileptics tested, forty-six gave positive reactions to different proteins, and seventy-six gave no reaction at all. The special group appears to be quite healthy, usually inclined to obesity and not excitable or markedly unstable, and gave positive tests. The fact that they do not respond to bromides is characteristic of this group. The results of these tests show conclusively that in some cases where it is possible to adjust the diet on the basis of skin tests, no further treatment is necessary. In some cases where peptone was given by mouth, the fits became less frequent and in some cases of associated insanity there was mental improvement as well. A very few cases became decidedly worse with peptone treatment. These tests may be used as a guide not only to treatment but also to diagnosis.

Radiographic Localization of Spinal Lesions by Sicard's Method.—Percy Sargent (*British Medical Journal,* August 4, 1923) describes Sicard's method as follows: A small quantity, between one and two c. c., of lipiodol is injected into the spinal theca through a suboccipital puncture, the patient being in a sitting posture. Lipiodol is a heavy oily fluid consisting of poppy oil containing forty per cent. of iodine, and is remarkably opaque to the x rays. The lipiodol sinks slowly downward and is arrested at any point of occlusion of the spinal theca, so that the upper limit of a tumor, for instance, can be accurately demonstrated by x ray examination. Similarly, the lower limit of such a tumor can be shown by injecting the lipiodol through a lumbar puncture, and taking a radiogram with the patient in the head down position. The value of Sicard's method is obvious. Not only can it be employed to ascertain whether or not a block exists in the spinal theca, but it shows the exact position of the lesion with relation to the bones. From the operative viewpoint the localization is more accurate than that which can be arrived at by neurological examination. A radiographic demonstration of the relation of the lesion to the vertebrae is of great value and enables a tumor to be exposed by the removal of perhaps only three laminal arches. If the upper limit of a tumor having been defined, a second examination is made by taking a radiogram with the patient placed head downward after injecting lipiodol through a lumbar puncture, the lower limit of the tumor can also be demonstrated. This is a matter of considerable importance to the surgeon, since tumors extending over many segments are sometimes encountered.

Treatment of Tetany with Ammonium Phosphate.—D. Adlersberg and O. Porges (*Wiener klinische Wochenschrift,* July 19, 1923) obtained excellent results in the treatment of tetany with ammonium phosphate. The galvanic excitability was always diminished in a short period of time and the symptoms of tetany were completely relieved. This result did not originate from the gastrointestinal tract without the substance being resorbed, as has been claimed, but the reduction of the carbon dioxide tension of the alveolar air, the diminution of the alkali reserve, and especially the excretion of the urine of phosphate which is increased several times above the normal, show that this substance is resorbed and acts by way of the blood. The acid ammonium phosphate is a very effective remedy against tetany, which is well borne and taken readily. Eighteen grams are given daily in a litre of water plus some flavoring vehicle. The results are prompt, appearing on the first day after its administration. The subsequent doses may possibly be diminished.

Von Wagner's New Treatment of General Paralysis.—Alexander Pilcz (*Lancet,* January 6, 1923) treated 141 paretic patiets according to the following method: A patient is selected who suffers from tertian malaria (but not from tropical malaria) and who has not been treated by quinine (in order to avoid quinine fast stems of plasmodia). During an attack of fever, two c.c. of blood are taken from the patient by venous puncture, and injected underneath the skin of the paralytic patient's back. After an average of one to two weeks, the first attack takes place, accompanied by shivering; the temperature rises to 40° C. and over. After some ten or twelve attacks the malaria is checked by quinine during the first three or four days (0.5 gm. quinine sulphate twice a day for three or four days, and then once daily for two weeks); at the same time a course of neosalvarsan is begun (intravenous injection once a week, commencing with 0.3 gm., and working up to 0.6 gm.). During the malarial attacks, acoustic hallucinations, ideas of persecution and deleterious and catatonic states are occasionally noticed, but all these symptoms will cease when the quinine course of treatment is started. This treatment should be applied not only when the general paralysis is already manifest, but also much earlier, in any case of secondary syphilis.

Relationship of Acid and Alkali in Tetany.—Herb. Elias (*Wiener klinische Wochenscrift,* October 5, 1922) finds that the disturbances in the acid metabolism play no important part in the pathogenesis of tetany in adults. The question of the pharmacological influence upon tetany by acid and alkali is by no means settled. Up to the present time, the following may be said of the results of investigations, concerning which there is still considerable dispute: 1. Very large amounts of acid increase the irritability of nerves in man and in animals. 2. Small amounts of acid seem to diminish the tetanic irritability. 3. Alkalies seem to increase them. 4. The phosphoric acid ion increases the nervous irritability in normal and in tetanic individuals and animals. This increasing of the nervous irritability through the action of phosphoric acid is more intensive than the inhibitory action of small doses of acid.

Causes of Headache.—A. B. Pavey-Smith (*Lancet,* September 8, 1923) classifies the causes of headache as follows:

INTRACRANIAL.

A. Cortical—Headache arising in the sensory cortex. 1. Functional—hysteria, neurasthenia, migraine (hemicrania). 2. Organic—disseminated sclerosis. B. Dural—Headache due to irritation of nerves of dura mater. 1. Intracranial pressure—a. Raised by: a. Hyperemia. i. Active—e. g., head injury; fevers; nephritis; bacterial toxemias; fatigue, reaction after syncope; poisons (lead, alcohol, etc.); anemia. ii. Passive—e. g., asphyxia; heart disease. iii. Cerebral edema; head injury; sunstroke. iv. Increase of cerebrospinal fluid.—Hydrocephalus; meningitis; head injury. v. Increase of cranial contents.—Tumor; cyst; gumma; abscess; extravasated blood. b. Lowered by deficiency of cerebrospinal fluid—headeache due to pressure of unsupported brain on basal dura and tentorium. i. Leakage.—Lumbar puncture. ii. Hyposecretion.—Anemia. 2. Inflammation.—Pachymeningitis, localized suppurative meningitis, subdural abscess, general paralysis of the insane.

CRANIAL.

A. Bone disease.—Headache due to irritation of periosteal or dural nerves. Osteitis, Periostitis, Extradural abscess—e. g. infected fractures; extensions of otitis media; syphilitic necrosis. B. Nasal sinuses.—Headeache due to irritation of nerves in mucosa lining. Sinusitis and Retention.—Headache without other symptoms or with nasal catarrh or obstruction "Excitable" Sinus.—Constipation; toxemias; menstrual. Pain arising in the middle ear and mastoid is not included under headache.

EXTRACRANIAL.

Headache due to irritation of nerves or nerve-endings outside the cranial wall, and referred. 1. Ocular.—Muscular fatigue—errors of refraction. Hypertension—glaucoma. Inflammatory—iritis. 2. Dental.—Frontonasal headache referred from upper incisors—Dental caries. 3. Nasal.—Pressure on septum—headache with nasal obstruction. Meckel's ganglion inflammation—sphenopalatine syndrome. 4. Neuralgic.—Irritation of branches of fifth or other scalp nerves—Trigeminal neuralgia; cervical caries (occipital). 5. Rheumatic.—Inflammation of muscle or aponeurosis of occipitofrontalis—myositis; muscular rheumatism.

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Medicolegal Notes.

DEATH BY POSTOPERATIVE SHOCK HELD COMPENSABLE

An employee who sustained injury by accident arising out of and in the course of his employment received medical attention from his employer's physician; the latter, and also a surgeon employed by the employer, advised a surgical operation as the only means of relieving the employee's condition, which he was informed was stone in the kidney, and the result of his accident. The employee consented to the operation, which was performed by the employer's surgeon at the employer's expense. The employee died of postoperative shock as a result of the operation. The operation showed that the employee had been suffering, not from stone in the kidney, but from a calcareous tubercular suprarenal gland of the right kidney, a condition not caused by the injury. For this reason, the employer contended, in proceedings under the Indiana Workmen's Compensation Act, that the causal connection between the employee's accident and his death was broken, and his death was not the result of his injuries. The Indiana Appellate Court holds, National Rolling Mill Co. v. Kish, 139 N. E. 454, that the death was the result of the accident, and so compensable.

WHAT CONSTITUTES A DIAGNOSIS

In sustaining the conviction under the California statute of 1917, p. 114, §17 of a chiropractor for practicing without a license, the California District Court of Appeals, in People v. Willis, 217 Pac. 771, rejected the accused's claim that he could not be legally convicted because in his practice he did not "diagnose" human ailments. The court said that "it is difficult to conceive of any one trying to restore to a normal condition a person who is abnormal without a prior investigation and determination, in a general way, at least, of the character of his abnormality. Manifestly, there are no fixed limits to a diagnosis. It may not amount to a scientific classification of the ailment, but it may go further than an observation of the most obtrusive symptoms, and may be accurate or inaccurate, and yet be within the contemplation of the statute. It seems like an aspersion on the character and intelligence of this respectable body of practitioners to intimate that they attempt to restore 'the normal activity of the tissues' without any inquiry or investigation as to what tissues are affected and in what manner their activity may be abnormal."

Moreover, under the California statute, the defendant would be equally guilty in giving treatment without a diagnosis.

EXAMINATION OF PODIATRISTS DOES NOT APPLY TO MEDICAL PRACTITIONERS

Act of Congress of May 23, 1918 (40. Stat. 560) providing for examination of those practising podiatry for compensation in the District of Columbia, makes an exception of "regular practicing physicians or surgeons." The Court of Appeals of the District of Columbia, Howerton v. District of Columbia, 289 Fed. 628, holds that osteopaths, entitled to practice in the District of Columbia, are included in the exception.

The court is of opinion that "the act is not intended to interfere with the general practice of any recognized branch of medical science; nor that a general practitioner, in any established branch of medical science, shall be limited in the treatment of his patients to all parts of the body except the foot, which, except in cases of surgical treatment, shall be reserved for the podiatrist." The act defines podiatry or chiropody to be "the surgical, medical or mechanical treatment of any ailment of the human foot, except the amputation of the foot or any of the toes, and also except the use of an anesthetic other than a local one."

LIMITS OF AUTHORITY OF INSURANCE COMPANY'S EXAMINING PHYSICIAN

Where a physician is employed by a life insurance company merely for the purpose of making a medical examination and a report thereof to the company, and has no other duty or authority with reference thereto, the Ohio Supreme Court holds, Myers v. Hancock Mut. Life Ins. Co., 140 N. E. 504, that subsequent knowledge of such physician with reference to the changed physical condition of the applicant examined by him prior to the approval of the application and issuance of the policy, and uncommunicated by him to the company, is not binding upon the company, nor does it constitute a waiver of the provision of the application that such policy shall become effective upon approval at the home office of the company "while the person to be insured is in the same condition of insurability."

UNANSWERED QUESTION AS TO PROTECTION AGAINST MALPRACTICE ACTIONS BY MEDICAL ASSOCIATION REVERSIBLE ERROR

In an action for damages for malpractice in treating the plaintiff's toe, which it was alleged resulted in the necessary amputation of the leg, the plaintiff, in making his case, on cross examination of the defendant asked him whether he was a member of the Northwestern Medical Association. Being answered in the affirmative, he further asked if the defendant had reported the case to the association, and whether it was not one of the purposes of the association to protect doctors against malpractice actions. The North Dakota Supreme Court holds, Stoskoff v. Wicklund, 193 N. W. 312, that the asking of these questions constituted prejudicial error, requiring a new trial, even though the objections interposed by the defendant to such questions were sustained by the trial court, and the witness was not required to answer them.

The mere fact of the loss of a leg under the care of a physician, although negligence on his part is established, is not in itself sufficient to sustain a verdict for damages, in the absence of evidence tending to show that such loss was the proximate consequence of such negligence.

PREEXISTING DISEASE AGGRAVATED BY ACCIDENTAL INJURY

In proceedings under the Illinois Workmen's Compensation Act for the death of an employee following a fall while unloading a car of roofing paper, a witness for the applicant, one of the two physicians who performed the autopsy, testified that in his opinion death resulted from hypostatic pneumonia and meningitis, conditions aggravated or accelerated by the injuries received. The other physician, a witness for the employer, agreed in the main with this testimony as to the physical conditions shown by the autopsy, and stated that the death might or might not have been due to the injury. The Illinois Supreme Court held, Great Lakes Supply Co. v. Industrial Commission, 140 N. E. 2, that the findings and award of compensation by the Commission were not against the manifest weight of evidence. The court states the rule in Illinois to be that: "Where an employee dies from a preëxisting disease and the disease is aggravated or accelerated by an accidental injury, or an injury which produced pneumonia or other disease which aggravated or accelerated such preëxisting disease, the death may be said to be caused by accidental injury."

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Insulin in the Treatment of Diabetes

With a Note Upon the Effect of Colds in Cases of Diabetes.

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The following report, with accompanying charts, is offered to illustrate my experience to date in the use of insulin, regarding the effects of which at the time I began using it in September, 1922, there was practically no clinical information. Each investigator, therefore, has had to learn its effects for himself from his own observations and laboratory data. The accompanying graphic charts are offered as the best means of grouping and correlating the different factors which are involved in the progress of a case of diabetes, and as the best method of visualizing the effects of any particular form of treatment.

I wish to extend my most hearty thanks to Dr. Clowes, of the Research Department of Eli Lilly & Co., whose cordial cooperation has made possible this investigation. For a period of about six months, this company supplied to us without cost as much insulin (under the trade name, iletin) as we could use.

Small doses were given at first, the effects of each dose being controlled by a blood sugar estimation. Later larger doses were employed and when it was found that the patients could take these safely, I finally ventured to use doses of fifty units each. Throughout my investigation the insulin has been given intravenously, for the simple reason that I can give the injection and then withdraw blood for the blood sugar estimation without changing the syringe, so, unless it should be proved that subcutaneous doses offer a distinct advantage, I shall continue to use this method. It is interesting to note that even the large dose of fifty units rarely produced a reaction. I have given this dose twice a day and on some occasions have even added a third smaller dose without observing any reaction. On the other hand, two of the most severe reactions that I have seen followed much smaller doses of insulin, namely twenty and eighteen units. Fortunately, during this whole experimental period, I did not meet with a single accident. It was a clinical venture into the unknown, and I felt that it was my duty to learn all I could during this time. I am not advocating maximal doses. That was but a part of the program of study, an attempt to see how large doses could be used with safety. Here I am offering a few of the cases that were studied, with an attempt to interpret the effects. While my interpretation may be disproved, as with time our knowledge of the action of insulin increases, on the other hand, the data—the doses used and their effects—will remain unchanged and I trust will add to our understanding of this new and splendid remedy.

FIG. I.—Patient in Case I.

An interesting phase of the relationship of the blood sugar content to insulin is illustrated in Charts I and II. Chart I represents the fall and rise of the blood sugar of a diabetic, thirty-two years of age, on a diet of forty-five gm. of carbohydrate, forty-five gm. of protein, and a total of eleven hundred calories a day. The chart shows the changes following breakfast and lunch, the quantities of food taken at each meal being stated on the charts.

Following an ordinary meal, we get much the same reaction as we do following a hundred gm. of glucose in the glucose tolerance test, the length of the hyperglycemia depending on the severity of the diabetes, namely, after each meal there is a rise in the blood sugar content followed by a gradual fall, until in three hours the blood sugar curve has nearly returned to the level at which it started.

In a diabetic, therefore, the hyperglycemia following meals is higher than that of the fasting state which persists throughout the rest of the day. The main question, therefore, in the use of insulin is, will insulin reduce

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this quotidian hyperglycemia? With this point in view, the next day, I kept the man whose blood sugar curve is given in Chart I, on identically the same routine, as to diet, but added two injections of insulin, one of twelve units before breakfast and one of fifteen units before lunch.

The fasting blood sugar when this second test was made was 222 mg. to the 100 c.c., as compared with 192 mg. to the 100 c.c. on the previous day. Yet, as Chart II indicates, the blood sugar promptly dropped below the normal level and remained below normal for the rest of the day. In this case, then, insulin accomplished the ideal result, i. e., it reduced a state of hyperglycemia to normal glycemia and kept it normal throughout the day.

Twenty minutes after the first injection of iletin, there was a slight reaction which manifested itself by the pounding of the heart and a subjective "shaky feeling." This lasted one hour. About five minutes after the second injection, when the blood sugar was forty mg. to the 100 c.c.—a reading which, of course, had not been made when this injection was given or it would have been omitted—a second reaction set in. With the blood sugar at such a low level one would expect a further drop, and a severe reaction, such as McLeod and his coworkers observed in animals. Yet this was not the case. The reaction was of the same intensity, duration, and character as the first. It should be noted, however, as a possible explanation of the mild degree of the second reaction, that it set in during the period of the usual postprandial rise of blood sugar.

From this brief study I think that we can reasonably conclude that in this case the hyperglycemia can be kept in check by the use of insulin, and that in time the patient's tolerance for carbohydrates may perhaps be increased. It shows also that hypoglycemia is not necessarily an absolute contraindication to insulin. Whether or not in this latter case it does any good to the patient is another question.

REPORTS OF CASES.

Case I.—The patient was a little girl, four years old, with no familial history of diabetes. She had measles in February, 1922, following which she began to fail. In May, a marked polyuria developed, with thirst, and shortly afterward sugar was discovered in the urine. She was put on a restricted diet, but she continued to fail. I was called to see her on December 21, 1922, when she was failing so rapidly that they thought she was going to die. I found a fretting and sleepy emaciated youngster with acetone breath, weighing only 26.4 pounds. Her blood sugar was 440 mg. to the 100 c.c.; there was a marked acetone reaction in the plasma and a very marked lipemia. The urine contained 6.9 per cent. sugar. (Fig. 1.)

I began the intravenous administration of iletin in small doses, viz., three units a day, given in the morning before breakfast. The child responded promptly, so that in three days her blood sugar had dropped to 150 mg. to the 100 c.c. The following day was Christmas and she ate some candy, as the result of which her blood sugar increased to 242 mg. to the 100 c.c. Two subsequent doses of iletin of four units each made no impression on the blood sugar, which in fact, began to rise gradually. On December 28th, the child was transferred to our diabetic hospital, and since then her diet has been carefully controlled. One may follow the progress of the child best from the graphic chart (Chart III). Under the increased doses of iletin—she never had a reaction—in about two weeks her blood sugar reached the normal level, and with three slight exceptions it has remained normal without iletin.

During that time she had a diet of 1,000 calories, which was quite sufficient for a child of her years; she began with thirty gm. of carbohydrate, which was gradually increased to seventy gm. The best proof that this diet had been sufficient for her was the fact that she gained weight gradually. Another point of interest in this case was that although the patient's blood sugar was normal, or below normal, she was still excreting considerable quantities of sugar in the urine. This would appear to indicate that her kidney permeability to sugar was low. Nevertheless, although I did not make a glucose tolerance estimation, I doubt very much whether the permeability was below normal. What probably happens is this: After each meal, just as after the ingestion of glucose for the glucose tolerance test, the blood sugar content is increased for varying periods of time; in all probability, therefore, during this period of postprandial hyperglycemia, the sugar spills into the urine, thus accounting for the varying quantities excreted daily. Without a glucose tolerance estimation this could not be stated as a fact, but on the basis of past experience, this seems a logical conclusion.

There is another point of interest in this case, which should be borne in mind in connection with any case of diabetes. On March 31st, the child contracted a cold, after which the blood sugar rose promptly. I have observed a similar sequence more than once among my diabetic cases. In this case the cold continued, bronchitis developed, and a reduction in diet was necessary. Iletin was given until the blood sugar dropped to the proper level and the infection subsided. The patient's weight decreased with the rise of blood sugar, but now she is gradually gaining again. Following this infection the urine sugar output for twenty-four hours has increased which probably means that postprandial hyperglycemia is more prolonged than before. Whether or not permanent damage has been done by this infection it is too early to say; often such a cold does permanently interfere with the progress of a diabetic patient, especially if it is not dealt with promptly.

Case II.—The patient was a boy, fifteen years of age, a factory worker, who gave no familial diabetic history, and no history of any children's diseases. He had been perfectly well until three months before he came to the clinic in June, 1922, when he began to have great thirst and polyuria. During these three months he lost about thirty pounds in weight. His skin had become dry, with an eruption but no boils. He used to be a heavy eater of sweets. There was no history of any infection preceding the onset of diabetes. He had had some swelling over the ankles. His mother said that on some days he was very sleepy.

The boy presented a picture of a beginning coma. He was markedly thin and very weak. He had an

ichthyotic skin, labored respiration, and a marked acetone breath; he was sleepy, and hard to arouse; one had to repeat questions put to him and then he answered with difficulty. The blood pressure was 110-65; otherwise the physical examination was negative. The blood sugar was 447 mg. to 100 c. c.;

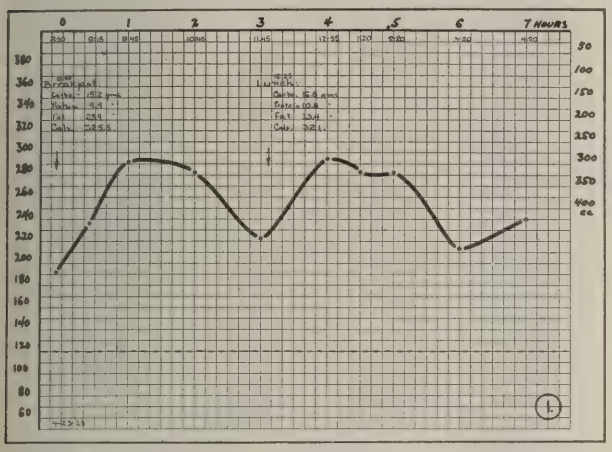


CHART I.—Blood sugar curve of a diabetic on a diet of forty-five grams each of carbohydrate and protein.

there was marked lipemia; marked acetone reaction in the plasma; the CO_2 tension in the plasma was twenty-six mm. Hg. The urine showed 1.3 per cent. sugar, and a marked reaction for acetone.

The boy's diet was gradually diminished, and he was given repeated small doses of iletin. For nearly two weeks, during which his diet remained the same, the blood sugar level dropped to about 250 mg. to 100 c. c. and remained at that level. After a further reduction in his diet the blood sugar content was diminished further. The patient was discharged on October 28th with a blood sugar content of 136 mg. to 100 c. c. He returned two weeks later for a blood sugar estimation, at which time it was 174 mg. to 100 c. c. He continued on the same diet and two weeks later his blood sugar content was 112 mg. to 100 c. c. I then raised his diet—chiefly the fats—to twenty-five mg. carbohydrate, thirty-five mg. protein, a total of 1,800 calories. When he returned two weeks later his blood sugar was 294 mg. to 100 c. c., but in spite of this high fat diet there was not a trace of acetone in the plasma. His urine was loaded with sugar. His diet was cut down to fifteen gm. carbohydrate, twenty gm. protein, a total of 1,000 calories, but when he came again two weeks later his blood sugar was 288 mg. to 100 c. c., there was acetone in the plasma, lipemia was 3 plus, and his urine was loaded with sugar. It was strange that lipemia and acetonemia should develop when the fat in his diet had been diminished practically one half. At this stage his diet was still further diminished, namely to ten gm. carbohydrate, twenty gm. protein, a total of 400 calories. When he came back three weeks later his blood sugar was still higher—316 mg. to 100 c. c., there was no lipemia, but the urine was loaded with sugar. The patient was again put in the hospital, on a low diet and iletin, but all this made but little impression on the blood sugar content. The blood sugar level would fall a little after the administration of iletin, but the reduction was only temporary; by the next morning the blood sugar level would again be raised. With the small quantities of carbohydrate intake at this period, and the large iletin doses each day, the blood sugar of even a total diabetic should have been kept at the normal level.

The course of this case, which presents such a contrast to Case I, raises the question as to whether small doses of iletin may not burn up the sugar while larger doses stimulate the mobilization which appears in the blood stream. A comparison of the urinary sugar output during this second period with that during the first shows that it has greatly decreased. This also seems surprising for the blood sugar level is practically unchanged. The glucose tolerance curve, however, gives the explanation, namely, that the renal filter is becoming less and less permeable (Chart IV). This patient did not return for further treatments, unfortunately, so that we do not know the outcome of the case.

CASE III.—The patient was a man, twenty-two years of age, with no familial diabetic history. He had had measles, whooping cough, chickenpox, mumps; he had had scarlet fever at the age of ten years, gonorrhea and suppurating orchitis. He complained of violent thirst, loss of weight, frequency of urination, swollen feet and ankles, defective vision and nervousness. A month before he came to the clinic sugar had been discovered in the urine. At that time he had lost about thirty pounds in weight during the preceding one and a half months. Physical examination was negative. Upon his admission to the clinic the blood sugar was 490 mg. to 100 c. c., and the urine heavily laden with sugar—he excreted 40.33 gms. in twenty-four hours.

The best picture of the patient's progress in this case is shown by the graphic record (Chart V). As is shown there on the first day he received three doses of iletin, of 8, 16, and 25.6 units, respectively, and in the short period between 10 a. m. and 3 p. m. his blood sugar reached the normal level. He was dis-

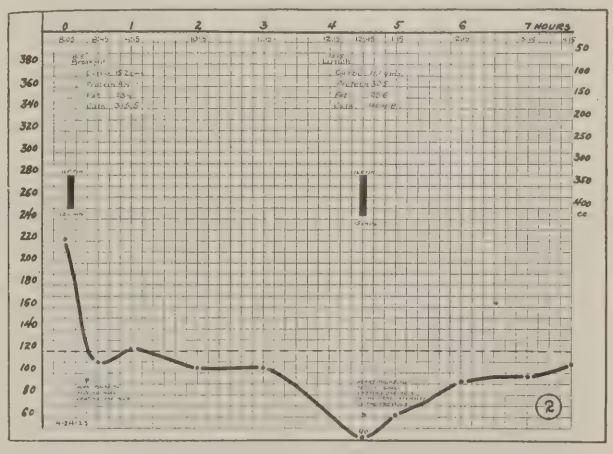
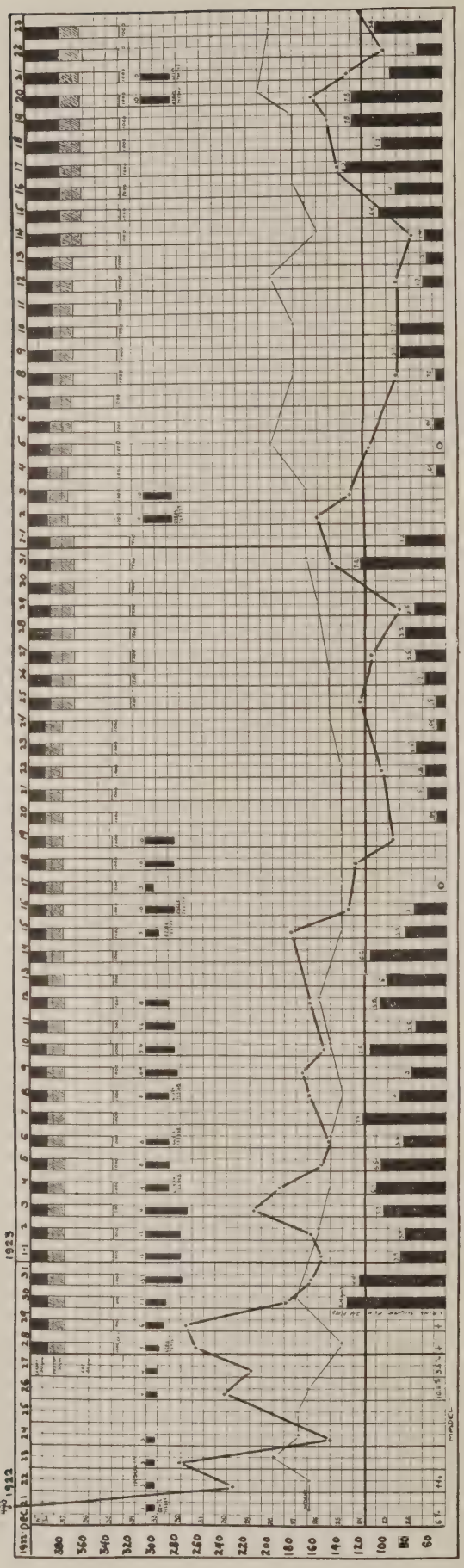


CHART II.—Blood sugar curve of same man as in Chart I, on the same diet with two injections of insulin.

charged from the hospital two weeks after admission, with a blood sugar content of 96 mg. to 100 c. c., on a diet of fifty gm. carbohydrate, forty gm. protein, a total of 1,500 calories. He has been working hard ever since and is now taking fifty-five gm. carbohydrate, forty-five gm. protein, a total of 1,800 calories. He feels well and his blood sugar remains at the normal level.



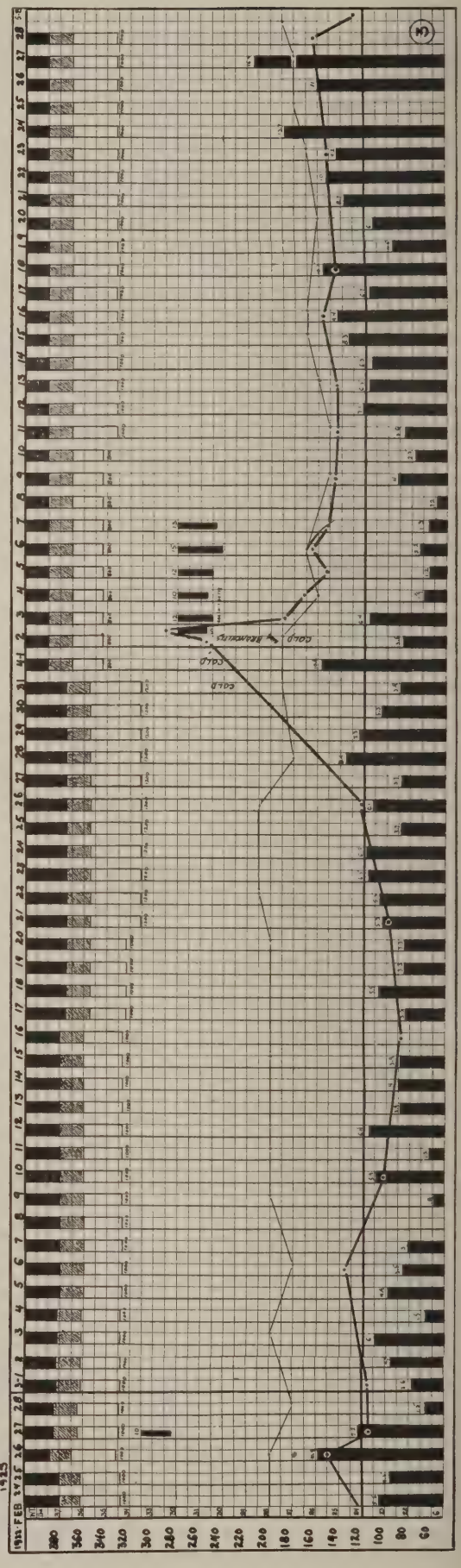


Chart III.—Blood sugar curve of patient in Case I.

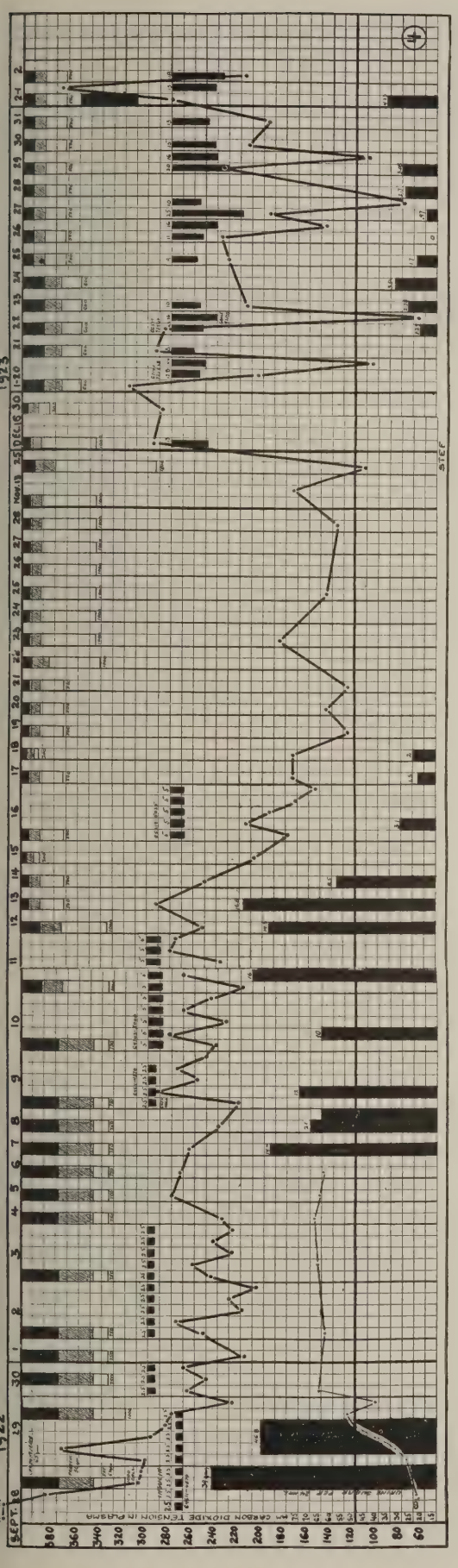


CHART IV.—Blood sugar curve of patient in Case II.

CASE IV.—The patient was a married woman, fifty-three years of age, with no familial history of diabetes. She had had scarlet fever in childhood, and a suspension of the uterus six years before. She complained of shortness of breath, which had increased progressively during the last ten years. This was so pronounced that even the slight exertion of walking made breathing difficult and she was unable to walk up stairs. It was harder for her to get air into the lungs than to let it out. She was obliged to use two pillows at night. She coughed when she was short of breath and at times had coughing spells, particularly when combing her hair. She had pain in the right side of the neck leading up to the ear, and had been very nervous during the past three weeks. There was no swelling of the feet; no stomach disturbance, no loss in weight.

Physical examination showed a large, stout woman, with eyes and teeth in fair condition, and throat sound. She had quite a large, firm goitre, which seemed to descend into the superior strait of the thorax. She breathed much better with her head thrown back, having choking spells when her head was bent forward. Her heart was enlarged to the left; sounds were clear; blood pressure, 170-110; abdomen full and large; liver not enlarged. The x ray examination revealed a substernal goitre. Blood examination showed blood sugar 200 mg. to 100 c. c. and she also had sugar in the urine. After her return home she caught cold, the mucosa of the larynx and bronchi swelled, she became extremely cyanotic and there was danger of her choking to death. She was brought back, given inhalations, etc., and received two doses of iletin, eight units each, the first day. The next day her blood sugar was normal. A thyroidectomy was performed the next day and an uneventful recovery followed. She was discharged from the hospital on the sixteenth day on a diet of sixty-five gm. carbohydrate, forty-five gm. protein, a total of 1,800 calories. When she returned a month later her blood sugar was normal. (Chart VI.)

Apparently this was a mild case of diabetes in which the preoperative control of the blood sugar was of distinct service to the surgeon.

CASE V.—A physician, sixty-one years of age, leading a very active life, gave no history of any diseases, or operations, but said that after an epidemic of influenza, in which he had worked very hard, he was not able to recuperate properly; he became tired easily and caught cold readily; he slept poorly and did not feel refreshed when he did sleep. He had discovered sugar in his urine several years before and had been on a partially restricted diet ever since. On October 17, 1922, his blood sugar was 232 mg. to 100 c. c. and the urine showed 2.3 per cent. sugar.

On the day on which he was admitted to the hospital his blood sugar was 250 mg. to 100 c. c. At 3 p. m. he was given sixteen units of iletin, and at five, when eight more units were administered, his blood sugar had dropped to ninety-two mg. to 100 c. c. A rapid improvement followed these injections of iletin, the progress being shown best by the graphic record (Chart VII). Six days after his entrance the patient was discharged from the hospital on a diet of thirty-five gm. carbohydrate, forty five gm. protein, 1,500 calories, and he has been

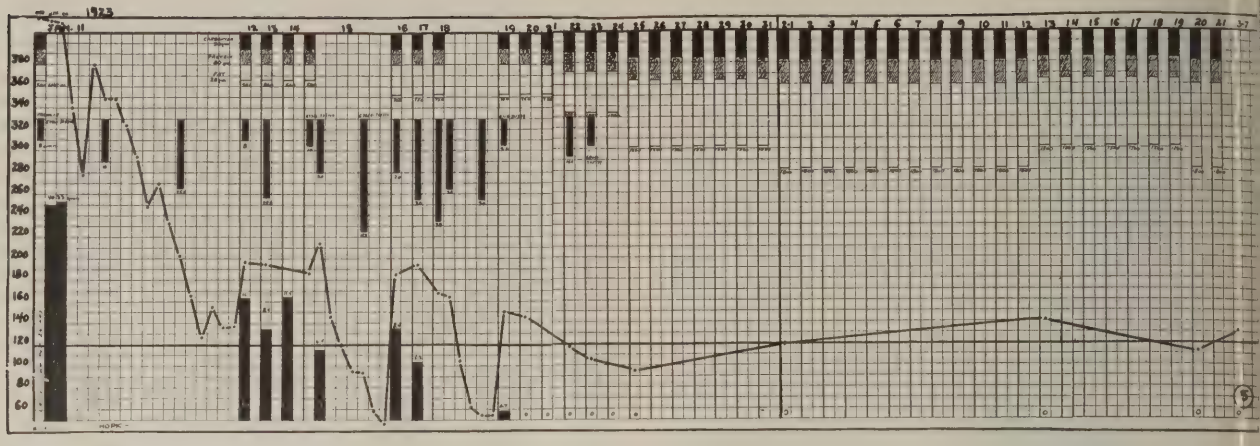


CHART V.—Graphic record of patient's progress in Case III.

working hard ever since carrying his country practice. Subsequent blood examinations have shown a normal blood sugar content, and at present he is on a diet of seventy gm. carbohydrate, fifty gm. protein, 2,000 calories, feeling well, and leading a very busy life. The striking point in this case is the rapidity with which the blood sugar content became and remained normal and the continued progress to date on an increasing diet.

CASE VI.—The patient was a laundryman, single, twenty-eight years of age, with no familial history of diabetes. He had had no childhood diseases, no operations. He complained of loss of weight, loss of strength and frequency of urination. While in the army overseas, he had been gassed. Three months before he had noticed dizziness, thirst and polyuria, because of which he consulted a physician who found sugar in his urine. He was put on a restricted diet and improved somewhat, but he had lost about twenty-two pounds during the last three months. Physical examination showed a thin, emaciated patient with a dry skin. Other physical findings were negative. Laboratory examinations showed he had 3.4 per cent. sugar in the urine, which also gave a heavy acetone reaction. His blood sugar was 485 mg. to 100 c. c., and acetone was present in the plasma. There was also a marked lipemia.

When the patient entered the hospital on January 11, 1923, his fasting blood sugar was 696 mg. to 100 c.c. The treatment and its results are shown in Chart VIII. It is interesting to note that in spite of the large doses of iletin given on January 15th and 18th—eighty-six and ninety units respectively—there was no reaction. This was a very severe case of diabetes and the blood sugar returned very gradually to the normal level. The patient's glucose tolerance at this time is shown by the following findings in a glucose tolerance test made on February 1st:

Mgm /100cc	Before administration of 100 gm. of glucose	half hour after	one hour after	two hours after	three hours after	four hours after
400	...	...	375	454	497	400
300	...	300	...	...	...	...
200	187	...	...	...	...	...
150	...	...	...	...	...	...
120	...	...	...	...	...	...
sugar in urine	neg.	...	.16gm.	.61gm.	.96gm.	.77gm.

Total water intake 950 cc.
" urine output 295 cc.
" sugar intake 100 gm.
" " output 2.26 mg.
Blood corp. vol. at start 39%
Plasma chloride 515 mg. per 100 cc.
Blood urea 18 " " " "
" uric acid 1.6 " " " "
" creatinin .87 " " " "
N. P. N. 21.7 " " " "
Plasma acetone—neg.
Wassermann—neg.

After January 29th he had a series of repeated colds; moreover, he was discharged from the hospital

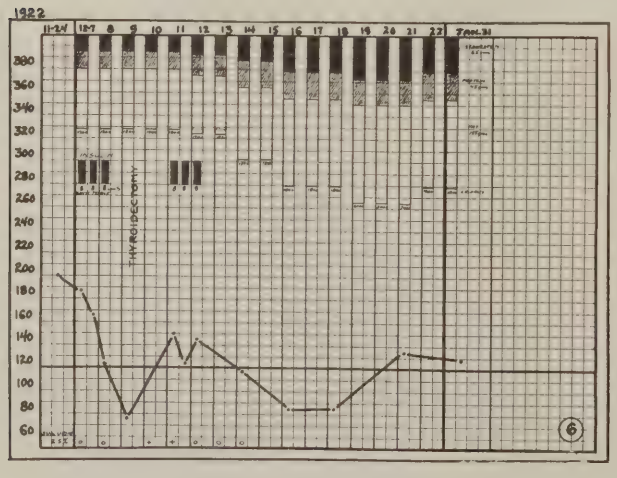


CHART VI.—Blood sugar curve of patient in Case IV.

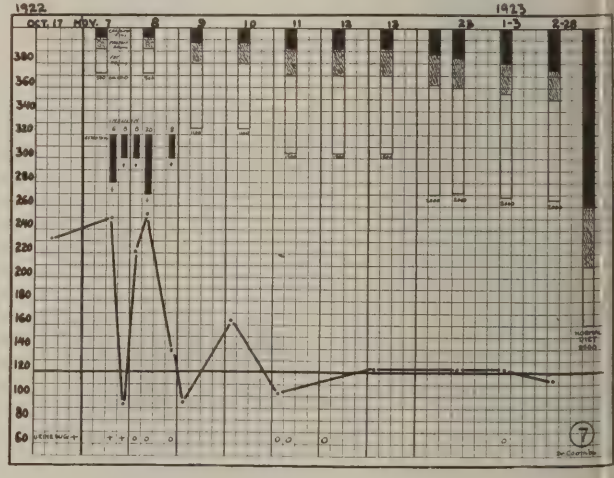


CHART VII.—Graphic record of progress of patient in Case V.

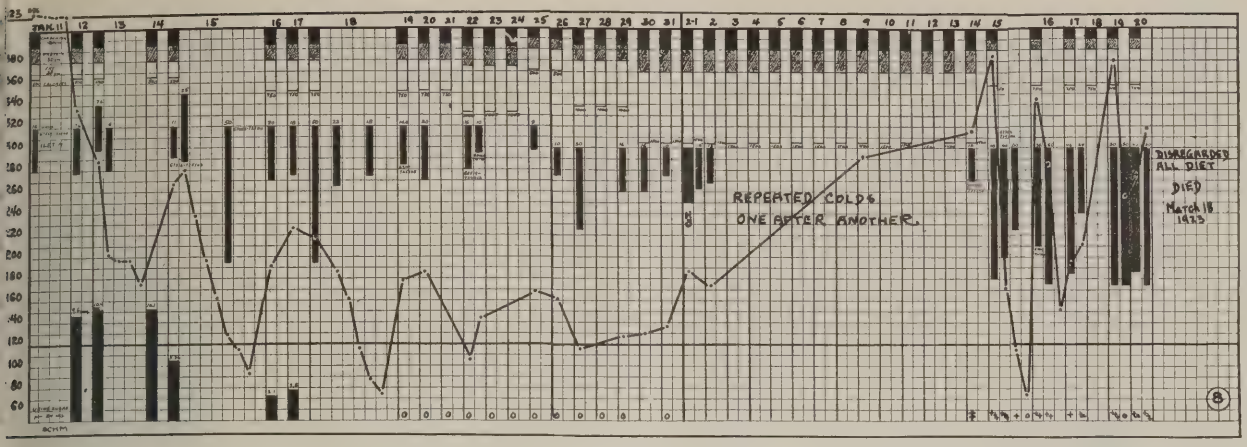


CHART VIII.—Showing results of iletin treatment in Case VI.

in February 2nd and it is doubtful whether he adhered closely to the prescribed diet after his discharge, although he knew how to calculate the proper proportions of protein, carbohydrates and fats. These colds, together with probable overeating, raised his blood sugar to 384 mg. to 100 c. c. on the 15th of February. At that time I attempted to control his blood sugar by huge doses of iletin, for which he came to the clinic, and as much as from 100 to 118 units were given him daily with no reaction. His diet was greatly reduced but his blood sugar curve was not affected as the chart shows (Chart VIII). The patient grew discouraged and gave up his struggle, began to eat everything, and died on March 18th.

CASE VII.—A colored undertaker, thirty-two years of age, with no familial history of diabetes. He had been married nine years and had two children living and well. He had had measles, mumps, whooping cough, chickenpox, grippe, pleurisy and gonorrhea. Sugar had been found in his urine eighteen months before when he had applied for life insurance. He had had frequency of urination for the past eight or nine years. His weight had remained practically unchanged. He had always been fond of sweets but had discontinued eating them when sugar was discovered in his urine. He felt well and worked hard. Physical examination showed a robust young man with no abnormal physical findings. Upon admission his blood sugar was 280 mg. to 100 c. c. A glucose tolerance test gave the following findings:

Mgm /100cc	Before administration of 100 gm. of glucose	half hour after	one hour after	two hours after	three hours after	four hours after
400	...	384	410	475	380	313
300	280	...	...	...	...	...
200	...	...	...	...	...	...
150	...	...	...	...	...	...
120	...	...	...	...	...	...
sugar in urine	++	...	3.08 gm.	9.55 gm.	7.35 gm.	3.19 gm.

Total water intake 850 cc.
urine output 2110 cc.
sugar intake 100 gm.
" output 23.17 gm.

Blood corpuscle vol. at start 44%
Plasma chloride 545 mg. per 100 cc.
Blood urea 9 " " " "
uric acid 2.4 " " " "
creatinin .9 " " " "
N. P. N. 18.8 " " " "
Plasma acetone—neg.
Wassermann—neg.

Chart IX gives full information regarding the treatment and the progress of this case. The patient made a rapid and uneventful recovery, and was discharged on a sufficient diet for him to continue his occupation.

CASE VIII.—A merchant, fifty-five years of age, with no familial history of diabetes and no history of any of the diseases of childhood, or of operations. He complained of constipation, which was getting

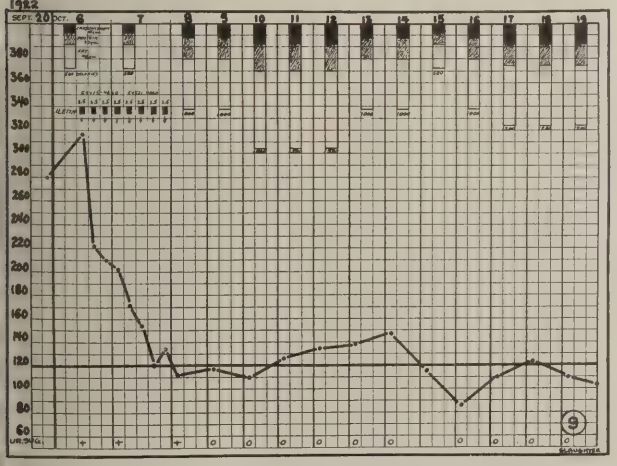


CHART IX.—Graphic record of treatment and patient's progress in Case VII.

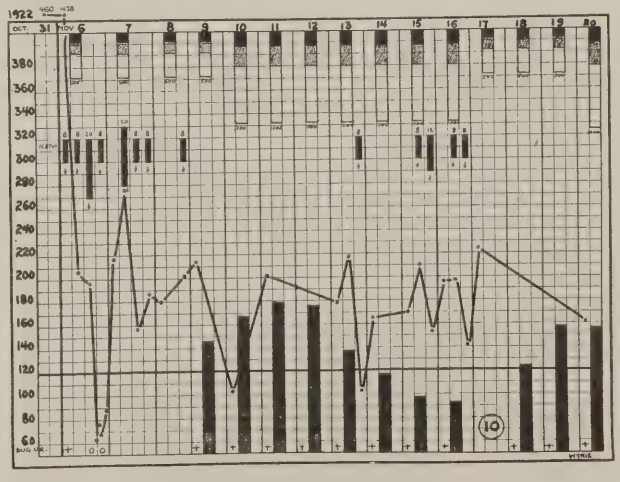


CHART X.—Showing progress under treatment of patient in Case VIII.

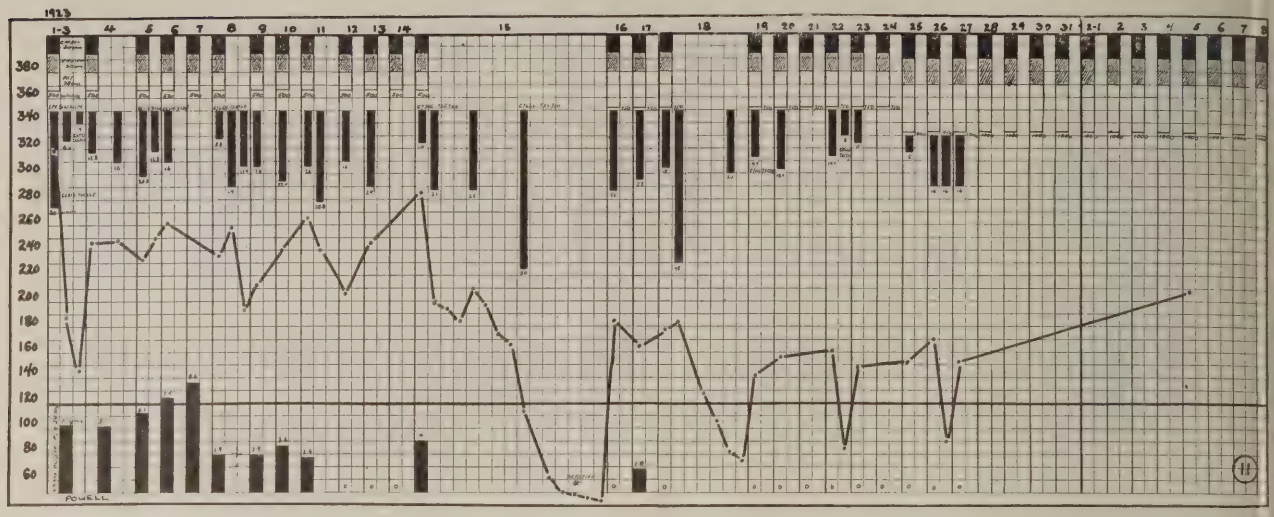


Chart XI.—Results of iletin administration in Case VIII.

continually worse. He had lost a good deal of weight; had a fair appetite but felt weak. He said he had no sense of feeling in his feet. The physical examination was negative. Laboratory tests showed sugar in the urine and blood sugar 460 mg. to 100 c. c. The Wassermann reaction was negative.

Chart X shows his progress under treatment. He received the first forty-four units of iletin in four doses, with a resultant abrupt fall of the blood sugar to below the normal level, and a reaction which, however, was not very severe. The following morning the blood sugar level was 276 mg. to 100 c. c., but with further doses of iletin it dropped to an average level of 170 mg. to 100 c. c. When the patient was discharged on the fourteenth day after he entered the hospital his blood sugar was 161 mg. to 100 c. c., he felt well, and most of his symptoms had subsided.

Case IX.—A factory workman, twenty-eight years of age, with no familial history of diabetes. He had had none of the diseases of childhood but had had lues and gonorrhea at the age of sixteen, for which he received antiluetic treatment. He complained of marked weakness and emaciation due to diabetes of five years' duration. During this time he had been on a diet; he had marked thirst and polyuria and had lost about thirty-five pounds in weight during these five years. Physical examination showed a rather emaciated young man, with dimness of vision, enlarged thyroid, and blood pressure—102-26. His blood sugar was 319 mg. to 100 c. c. and the urine contained acetone and 7.5 per cent. sugar.

The administration of iletin was begun at once, the results of which are shown on Chart XI. It will be noted that at first the patient was put on a low diet, namely thirty gm. carbohydrate, thirty gm. protein, a total of 500 calories. With this he received iletin two to three times daily, and although the doses were large, they did not make much of an impression on his blood sugar. Not until his fifteenth day in the hospital, when he received a total of 110 units of iletin, was I able to reduce the blood sugar. On that day it fell to the very low values of 61, 50, 49, 44 mg. to 100 c. c. respectively, and there was a very slight reaction. After these huge doses of iletin the blood sugar assumed a lower average level for a week, when the patient was discharged from the hospital. It would appear that in this case the heroic doses on the fifteenth day in some way helped to force the blood sugar level down and to keep it down, since up to that time doses of only fifteen to fifty units did not make much of an impression in spite of the low diet. The last blood sugar examination made June 15th showed a blood sugar content of 218 mg. to 100 c. c.

SUMMARY.

1. In a diabetic patient, varying periods of hyperglycemia follow each meal. Insulin seems to prevent this postprandial hyperglycemia and in some cases to induce a period of hypoglycemia after the ingestion of food.

2. The response to insulin apparently depends upon all of the factors which are concerned in the individual case. It would appear that a more prompt response follows the injection of insulin in cases in which the diabetes is of recent development although this statement must be considered as a generalization only.

3. Reactions to insulin, usually attributed to hypoglycemia, do not always vary in their intensity with the degree of hypoglycemia. These reactions sometimes occur when the blood sugar is within normal limits and sometimes even in the presence of a high blood sugar content. Often these reactions appear in from three to ten minutes after the intravenous injection of insulin. The period of onset, however, usually bears no definite relation to the blood sugar content.

4. The onset of a cold in the presence of diabetes causes an immediate rise of the blood sugar content which, especially in younger patients, tends to lower permanently the carbohydrate tolerance. This observation indicates that a cold may be considered as a definite causative factor of diabetes in patients in whom a prediabetic condition is present, that is, who have a lowered carbohydrate tolerance.

5. Whether or not in the individual case the injection of insulin is followed by a definite decrease in the blood sugar content, the general clinical improvement in these patients is marked. Increased experience will prove whether or not this apparent general improvement is due in part to psychic factors or to the insulin treatment *per se*.

A Rapid Simple Procedure for Estimating Small Amounts of Glucose in the Urine in Diabetic Cases, as a Guide to Insulin Therapy

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The continued successful management of a case of diabetes mellitus under insulin therapy demands a recognition of three fundamental principles.

1. An approximate balance must be maintained between that fraction of glucose in the prescribed diet which the body cannot burn because of the diabetes, and the dose of insulin required for its utilization.

2. The diet must be of such a character and so distributed through the day as to permit of the greatest degree of utilization.

3. The dose of insulin must be of sufficient quantity and so distributed through the day as to care for ingested glucose.

If samples of urine of the diabetic under treatment be examined during the day, one of three conditions will be found.

1. The patient may be entirely sugar free, in which case the blood sugar is constantly below the kidney threshold point of elimination. In such a case the blood sugar will be found normal much of the day, a most satisfactory state.

2. Small amounts of sugar may be found in all of the voidings which will mean that the renal threshold is constantly being exceeded, that the blood sugar is constantly higher than normal and that improper balance exists between insulin doses and food intake.

3. Urine sugar may be found in one or more voidings, remaining specimens being clear. This means that during the glycosuria period the renal threshold is being exceeded and that readjustment of either diet or insulin therapy is necessary for those periods.

Clinical experience with insulin therapy in upwards of three hundred cases over a period of one and a half years shows that patients undergo change and frequently need readjustment of both dose and diet. Also that those patients do best in whom the diabetes is controlled.

It would be helpful if a simple method were available which could be used by the intelligent patient or the family doctor in readjusting diet and insulin dose. The following plan is employed by the writers with a degree of success which justifies its more general use. It is assumed that the patient is under treatment, that diet and the insulin dose have been carefully estimated and that the patient is at home under the observation of the family physician. Sugar is found in either a single or twenty-four hour specimen. The patient is then instructed to save each voiding separately in a clean fruit jar for twenty-four hours and a quantitative estimation of the sugar present is determined by a simple adaptation of the quantitative method first suggested by Benedict (1) and simplified by Joslin for the use of nurses (2). We have further simplified the procedure by using a special pipette made for us and by the use of a table of values which obviates some of the mathematical calculations. The method as simplified is well adapted for the estimation of small amounts of sugar such as is found during the day in the urine of diabetics under insulin treatment.

TABLE FOR DETERMINING PERCENTAGE OF SUGAR IN URINE (SIMPLIFIED BENEDICT'S METHOD*).

Urine		*Benedict's Reagent*	
No. of c.c. Urine	No. of minims Urine	Per cent 15 c.c. reagent (expressed in decimals)	Sugar using 25 c.c. reagent
(1)	(2)	(3)	(4)
0.50	8.	0.0600	0.1000
0.60	10.	0.0501	0.0833
0.75	12.	0.0399	0.0666
1.00	16.	0.0300	0.0500
1.25	20.	0.0240	0.0400
1.50	24.	0.0201	0.0333
2.00	32.	0.0150	0.0250
2.50	41.	0.0120	0.0200
3.00	49.	0.0100	0.0166
3.30	54.	0.0090	0.0151
3.50	57.	0.0086	0.0143
4.00	65.	0.0075	0.0125
4.50	73.	0.0067	0.0111
5.00	81.	0.0060	0.0100
6.00	97.	0.0050	0.0083
7.00	114.	0.0042	0.0071
8.00	130.	0.0036	0.0062
9.00	146.	0.0033	0.0055
10.00	162.	0.0030	0.0050
11.00	179.	0.0027	0.0045
12.00	195.	0.0025	0.0042
13.00	211.	0.0023	0.0038
14.00	227.	0.0021	0.0036
15.00	.....	0.0020	0.0033
16.00	.....	0.0019	0.0031
17.00	.....	0.0017	0.0029
18.00	.....	0.0016	0.0027
19.00	.....	0.0016	0.0026
20.00	.....	0.0015	0.0025

*This table is based on the fact that twenty-five c.c. Benedict solution is exactly reduced by 0.05 grams of glucose.

If a specimen of urine contains so much sugar that 24 min. or less of it is sufficient to reduce fifteen c.c. of the reagent, the specimen should be diluted with one or preferably two volumes of water, and the correction made accordingly. For instance, if diluted once, multiply by two; if diluted two times, multiply by three, etc. We recommend using fifteen c.c. of Benedict's quantitative solution and the minim scale as the unit of measurement. The table, however, is arranged so that the original Benedict technic may be employed, in which instance twenty-five c.c. of the reagent and the large dropping pipette, graduated in c.c. should be used. The latter procedure is to be preferred when a large volume of urine contains only a small amount of sugar. In case the number of minims or c.c. required for the total disappearance of the blue color is not shown in the table, the number nearest should be used. An example is as follows: A single specimen of urine of 350 c.c. volume is found by the Benedict quantitative method to contain sugar. The urine is then tested according to the foregoing plan: Using fifteen c.c. of the reagent, twenty-six min. of urine caused a complete disappearance of the blue color. Consulting the table it is noted that twenty-six min. (column 2) does not appear in the scale, and that twenty-four min. is the nearest number. In column 3, under "fifteen c.c. reagent," it will be noted that the amount of urine contains a little more than two per cent sugar, the exact factor being 0.0201. If the total volume of the urine, 350 c.c., be multiplied by 0.0201 the total number of grams of sugar in the specimen will be ascertained, which is a little more than seven grams.

As is well known, Benedict's quantitative method is based on the reduction of an alkaline copper solution, in which the blue reagent is converted into an insoluble white precipitate. The reaction is striking and the end point definite and easily determined. For the convenience of those who may not have the formula at hand it is given below. This solution keeps indefinitely.

	gm. or c.c.
Copper sulphate, pure crystallized.....	18.0
Sodium carbonate, crystallized (one half the weight of the anhydrous salt).....	200.0

	gm. or c.c.
Sodium or potassium citrate	200.0
Potassium sulphocyanate	125.0
Five per cent. potassium ferrocyanide solution	5.0
Distilled water to make a total volume of	1000.0

With the aid of heat dissolve the carbonate, citrate and sulphocyanate in enough water to make about 800 c.c. of the mixture, and filter if necessary. Dissolve the copper sulphate separately in about 100 c.c. of water and pour the solution slowly into the other liquid, with constant stirring. Add the ferrocyanide solution, cool and dilute to exactly one litre. Of the various constituents, the copper salt only need be weighed with exactness. Twenty-five c.c. of the reagent are reduced by fifty mg. of glucose.

The utensils needed for the test are: one 500 c. c. conical graduate; one asepto volumetric pipette graduated at 15 and 25 c. c.; one asepto volumetric pipette graduated both in tenths of a c. c. and minims, of 3 c. c. and 50 minims capacity; one casserole or enamel ware cup of about 175 c. c. capacity. Small

FIG. 1.—Apparatus used in carrying out simplified Benedict quantitative test.

quantities of sodium carbonate, calcium carbonate and talcum (Fig. 1).

It is advisable first to determine the presence of sugar in the urine by some qualitative method for which purpose Benedict's qualitative reagent is best suited. If sugar be found the amount may then be determined by means of the quantitative reagent as follows: The total volume of the urine specimen should be estimated in c. c., and a 500 c. c. conical graduate is recommended. Using the special 15 to 25 c. c. volumetric pipette, 15 c. c. of the Benedict solution should be put in the enamel cup with about one half teaspoonful of anhydrous sodium carbonate and one fourth teaspoonful of talcum, the latter to prevent the liquid when boiling from spurting. Benedict advises the use of 25 c. c. of the reagent in making the test, but we have found 15 c. c. sufficiently accurate for this purpose. The solution is then brought to boiling temperature on a gas stove or over a free flame for which purpose a sterno lamp may be used. From the 20 minim special pipette urine is dropped rapidly into the boiling solution until the blue color disappears and a white precipitate forms. The exact number of minims or c. c. of urine re-

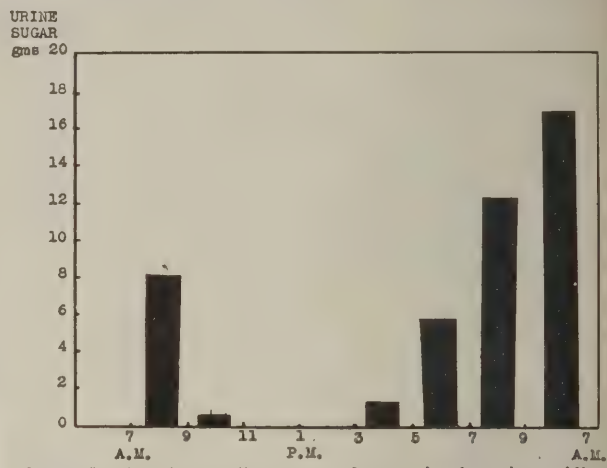

CHART I.—Showing small amounts of sugar in the urine voidings of a diabetic patient during twenty-four hours. This patient had a single daily dose of thirty units of insulin at 8:30 A. M. It served to keep his urine sugar free from 11:00 A. M. to 3:00 P. M. It will be noted that the various two hour samples and the night urine contained from one to sixteen grams of sugar. The thirty unit dose was then divided so that portions were given before each meal with distinct improvement in glucose utilization.

quired to complete the reaction is noted on the pipette. The percentage of sugar then may be easily determined by consulting the table (p. 237). The minim scale is used when small amounts of urine serve to reduce the copper, these graduations being finer and more easily and accurately read. If the mixture becomes too concentrated in making the test, hot water is added, being careful not to exceed the original volume. Some highly concentrated urines produce a brownish green color which is quite confusing and obscures the end point. Joslin overcomes this difficulty by adding calcium carbonate. We find that one half teaspoonful is sufficient to clarify the

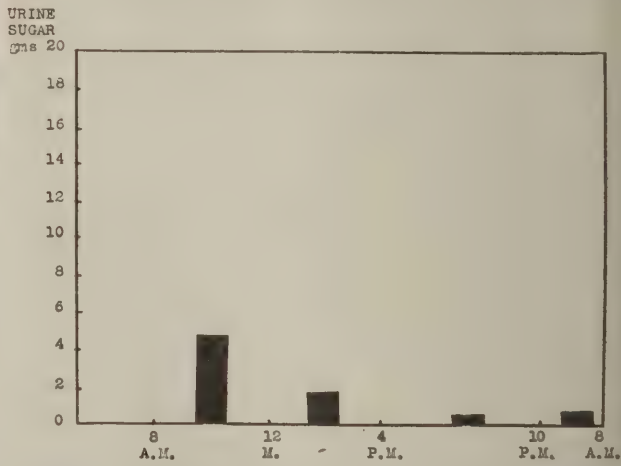

CHART II.—Showing small amounts of urine sugar in the various voidings of a diabetic patient during twenty-four hours. Severe case. This patient was receiving fifty-eight units of insulin daily. The morning dose of twenty-one units was taken at 9:00 A. M. This should be increased five units and given at least two hours earlier.

mixture of the greenish brown color. The test should be completed in from one and a half to three minutes.

A practical application of the test is as follows: If it is found that the patient is eliminating ten

grams of sugar at one period of the day, say at night, the diet for the evening meal may be reduced ten or more grams of glucose, or from three to five units of insulin may be added to the evening dose. If the diet be high and the patient in a state of good nutrition, the former procedure is followed, but if the diet be low and the patient undernourished, the additional insulin is added.

We call attention to a simple plan for estimating small amounts of urine sugar, using well known standard solutions. The method may be employed by either physician, nurse, or trained diabetic patient in regulating the diet and insulin dosage in cases in which the patient has been previously studied and the salient facts about his metabolism are understood.

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Further Observations on the Relation of Teeth, Tonsils and Intestinal Toxemias to Diseases of the Eye*

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This is a fitting time and place to present another paper on this subject or what I call my Three T's. If the span of life is to be extended then education of the health must go forward with education of the mind. It was not until about ten or twelve years ago that any great attention was given to the fact that infections about the teeth could cause disease in other parts of the body. My first paper on the Eyes and Teeth was read in 1910 at the New York Academy of Medicine. Ever since then I have been hammering away at focal infections as a cause of systemic disease. In 1919 I presented my Three T's to the American Medical Association at Atlantic City. Every patient of mine, whether clinical, or private, must stand the acid test for the Three T's (teeth, tonsils and toxemias of the intestinal tract). If the physician or dentist has these Three T's well in mind constantly, there is no chance to overlook any of the great sources of focal infections. The ramifications of the Three T's are so interwoven that it is impossible for me to dissociate them. In thinking of one in connection with a patient, the other two always come into my mind—in other words, they go hand in hand.

This paper is a plea for a more thorough consideration of the Three T's and for what they stand. When we realize that ninety out of one hundred persons die of some secondary disease, the direct result of some focal infection, then I think the time is certainly ripe for a serious examination of every patient that comes to the office or clinic.

THE TEETH

My experience teaches me that in the mouth will be found evidence of more disease than in any other region of the body. That is the reason why I said at the meeting of the American Medical Association that a "dirty mouth is one of the greatest menaces to the human race." In 302 patients with disorders of the stomach seen at the Mayo Clinic, 253 suffered from pyorrhea. What are we going to do for dental caries and pyorrhea. The answer is the reform diet and oral hygiene. Dead teeth, dental caries and pyorrhea are arch enemies of the ophthalmic surgeon. I said at Boston before the American Medical Association that it was just as necessary for the ophthalmic surgeon to clean house before operating as it was for the general surgeon. I wish to lay great stress upon the extraction of all dead teeth, regardless of x ray findings, provided the patient has any obscure symptoms which cannot be explained.

I have the records of over one hundred cases of obscure eye diseases which have been cured by the extraction of dead teeth, dead roots and fixed bridges. In twenty per cent. of these cases the x ray findings were negative. A great many of these patients had four or five pictures taken before any extractions were undertaken. I insisted on the extraction of the negative dead teeth just the same.

In every case where the tooth was removed it was found under bacterial examination to be infected. I wish to state that I am unalterably opposed to dead teeth, dead roots and fixed bridges.

HAY FEVER CURED BY THE EXTRACTION OF A DEAD TOOTH

Case.—I will now cite one case from my practice (I could give you one hundred). This lady, aged fifty, came to see me for chronic conjunctivitis which she had had for ten years. She had been treated by several well known oculists here in the city. She had also been a sufferer from hay fever for ten years and had the usual red eyes which you see in hay fever cases. She had had conjunctivitis for so long that an ectropion of both lower lids was developing. This patient had had the usual astringent treatment for this disease, but was gradually getting worse. I refracted her carefully and changed her glasses by increasing her astigmatism against the rule, looking her over for the Three T's. Her tonsils had been removed; her mouth presented a fine set of teeth, except for one dead tooth. This was x rayed and found to be negative. I advised extraction of the dead tooth, to which she finally consented. On examination the tooth was found to be infected. An improvement in the condition of the eyes immediately set in. In three months there was absolutely

*Read before the National Life Extension Convention at Cincinnati, Ohio, January 7, 1924.

no trace of the ectropion, the redness of the eyes had disappeared and, strange to say, three years have elapsed with no recurrence of the hay fever. This is the fourth case of hay fever that I have seen cured by the removal of dead teeth, which had been pronounced negative and safe after x ray findings. I am fully persuaded that dead teeth will become a serious menace to the life of the individual sooner or later as I hold and believe that dead teeth will eventually pursue their natural course to putrefaction and infection. Much more could be said about oral sepsis as a cause of diseases of the eye and general systemic diseases, such as gastritis, arthritis, ulcers of the stomach, arteriosclerosis, insanity and diseases of the heart. I am constantly reminded that pyorrhea is rampant, filthy mouths, spongy gums and advanced oral sepsis are seen on all sides.

THE TONSILS

Next on our program come the tonsils. The rôle of the tonsils as foci of systemic infection has long been known, yet how often are they overlooked unless the physician has the Three T's well in mind. Inspection of the tonsils is not enough. A culture from the surface of the tonsils and inside the crypts is absolutely necessary. Because of their position and structure, the tonsils are more prone to infection than any other organ in the body. Because of their position, they come in contact with various species of bacteria found in the mouth. More important than this, however, is the deposition of these bacteria with food which we find in the lumina of the crypts. We must also bear in mind that constant swallowing of infected secretions of the mouth and tonsils, is one of the greatest sources of danger to the human race. The septic condition of the tonsils was well illustrated in the case of a physician, a friend of mine, who was operated upon and reported by King. The patient had arthritis, heart and kidney trouble with episcleritis. He was unable to attend to his professional duties. The whole systemic involvement was cleared up with enucleation of his tonsils.

I maintain that tonsillectomy confers a high degree of protection against acute streptococcic infection of the lymphoid tissue of the throat. Then, what is the sense in wasting time in treating diseased tonsils? I personally have examined over three thousand pairs of tonsils in the last six years, as I inspect every man, woman and child that comes to my office for diseased tonsils, and I have yet to find a pair of healthy tonsils. Then, what is the sense of dillydallying with diseased tonsils. The answer is enucleation.

TOXEMIAS OF THE GASTROINTESTINAL TRACT

We know now that gastrointestinal disturbances and severe septic intoxication are brought on or aggravated by oral sepsis, diseased tonsils, and wrong food combinations, and not infrequently by all three. What is the sense of putting patients on a diet unless you are going to get rid of infected teeth and diseased tonsils. There is a growing demand for a scientific supervision of the diet both in health and disease. Diet and health are conjoined from the cradle to the grave and should therefore receive the careful consideration of both physician and dentists. I want to emphasize the importance of using certified raw milk and of eating green vegetables, raw fruits and salads. We should consume one quart of raw milk each day, or its equivalent in dairy products. Raw fruits and raw foods should be eaten as desserts and salads once or twice daily to insure the required amount of vitamines. In the cooking of vegetables something essential is destroyed. We ought, each day, to eat freely of some leafy vegetables such as spinach, lettuce, Brussells sprouts, cabbage or beet tops. The consumption of these leafy foods will go far toward overcoming constipation.

I have a reform diet which I use in my practice and also in my clinics. The principle of this diet is simple and plain. The rule is not to eat heavy starches and heavy proteids at the same meal.

Heavy starches: Bread of all kinds, potatoes, macaroni, corn, lima beans, rice, dry beans, sugar.

Line A

Heavy proteids: Meats of all kinds, fish, shell fish, chicken, duck, turkey, eggs and cheese.

Nothing above Line A must be eaten at the same meal with anything below Line A. Heavy starches above Line A must be eaten with fresh vegetables and salads and fruits for dessert. Heavy proteids below Line A must be eaten with fresh vegetables and salads and fruit for dessert. I have a diet sheet which I will pass around to the members. Anyone who does not like my combinations can make up his own, as long as he does not violate the rule and principle of the reform diet. You may eat any kind of food you like or choose provided you eat it at the right time. It is the never ending fermentation in the stomach and putrefactive conditions in the intestines, brought on by wrong food combinations, bad teeth and diseased tonsils, that is destroying the human race.

My reason for separating the heavy starches and proteids is that there is nothing in the stomach to digest the starches. The starches are digested in the mouth and intestines and if they are detained in the stomach with proteid food, the starches ferment and fight with the proteins. So eat starches when they won't be delayed in the stomach. When meat is eaten it causes a flow of gastric juices. In discussing my reform diet at the New York Academy of Medicine, R. H. Rose hit the nail on the head when he said, "It has been long recognized that in hyperchlorhydria carbohydrate digestion is checked by hydrochloric acid—meat stimulates hydrochloric acid, therefore interferes with the digestion of carbohydrates. For that reason take heavy carbohydrates when heavy proteids are not eaten so that they can get out of the stomach immediately." I have known for a long time that most people eat too much and that the gastrointestinal tract is a storehouse for toxemia. That is the reason why I take up with every patient that comes to see me the question of the diet.

CHRONIC GLAUCOMA DUE TO THE THREE T'S

A few words about glaucoma, the cause of which is little understood. From my point of view, chronic glaucoma is the outcome in every instance of prolonged chronic autotoxemia, provided we can exclude syphilis. My experience teaches me that chronic constipation, gout, rheumatism, arteriosclerosis, uric acidemia, or all of them exists in those who become the victims of glaucoma. Gen-

erally the tongue is heavily coated, and the breath is foul. The odor of the breath is often a significant index of the blood conditions. When it is offensive, to me it is always suggestive of toxemia. I said at the New York Academy of Medicine eight years ago that fewer of our glaucoma cases would come to the operating table if we would only remove the focal infections and the profound toxemia from which these patients all suffer. I wish to stress the fact that glaucoma is not merely a local disease, therefore it must be treated constitutionally as well as locally and surgically. I have the records of over fifty cases of chronic glaucoma which I am treating according to my method. So far, none of these patients have yet come to the operating table. Some of them have been under observation for ten years. When a great authority on glaucoma, like Elliot, comes out in his latest book and says, "It seems probable that one of the greatest advances of the future in the treatment of glaucoma may lie in the direction of the early and scientific combating the sources of autointoxication"—then I think it is high time that all ophthalmologists "watch our step" in glaucoma cases.

Briefly, my method of treatment is as follows: First, get rid of all dead teeth, fixed bridges, and oral sepsis; second, enucleate the tonsils, if this has not already been done; third, take Wassermann blood test, and urine examination; fourth, take chemical blood test to ascertain if there is an excess of uric acid in the blood; fifth, reform diet and bacillus acidophilus milk internally; sixth, nitrate pilocarpine in the eyes locally two or three times daily. Hot applications to the eyes three times daily and a hot bath at bed time. In uveitis, iritis, iridocyclitis, keratitis and optic nuvitis, I use the general method described above, except different drops for the eyes. The exclusion of heavy meats, sugars and stimulants such as coffee, tea, alcohol and tobacco, are most essential in the treatment of diseased conditions of the eyes.

CONCLUSIONS

1. The day is at hand when the progressive ophthalmologist and dentist must take up with their patients the question of the diet.

2. We must remember that sugar, sweets and soft carbohydrates are among the causes of the modern increase in dental caries.

3. Do not forget that meat and bread and meat and potatoes when eaten together ferment in the stomach and produce poisonous gases and other products of acidity, which will finally destroy you.

4. The proper diet, which means the reform diet, on the part of the pregnant mother and the child, combined with oral hygiene, makes good teeth.

5. In all our cases syphilis and gonorrhea must be excluded and all patients must have their urine examined at least once a year.

6. If we want to put a check on the degenerative diseases of middle age, we must keep our eyes open and keep a sharp lookout for the Three T's.

7. The tragedy of delay in some of the focal infection cases that I see is simply appalling.

8. In the light of my experience, I feel that I cannot do better than to go on preaching the gospel of the Three T's.

40 East Forty-first Street.

Penetrating Injuries to the Eye in Industrial Occupations*

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The eye may be penerated by steel, copper, wood, glass, etc., and the object drop out, be winked out, or be drawn out by a hand, etc., leaving behind it injuries that are more or less serious, and too numerous in character to be separately enumerated. The penetrating object may enter through the closed lid, cutting or not cutting the tarsus, or it may enter the eyeball direct, and either remain in the globe or come out of itself, or be removed by other agencies. Of course, those objects that penetrate the eyeball and come out without operative intervention are almost invariably long, spindling foreign bodies, too long in fact to enter the ball and be concealed within its walls. The treatment consists in the removal of the invader (if it has not already been done), antiseptic cleansing, and the care of conditions as we find them, remembering that hardly any two of such accidents will be exactly alike. We may find perforation of the sclera or cornea, prolapse of the iris, cataract, intraocular hemorrhage, etc., all of which conditions must be cared for in the manner understood by experienced ophthalmic surgeons. Such conditions may also exist if the foreign body is small in size, and has not only penetrated the eyeball but has also remained inside its walls.

I may as well say at the outset that I believe all cases of invasion of the eyeball by a foreign body should be submitted to an experienced x ray practitioner. The presence or absence of a foreign body should be positively known, as well as its size, shape and location. Only good and clear pictures should be accepted, as very much depends on their verdict, and I have known poor pictures to be shamed by good pictures, which disclosed the presence of a foreign body—undiscovered by the former. I require a front view and a side view, and, after I have seen and studied these, I do not as a rule feel the necessity of further localization. I say nothing against localization, and in some few cases it is most desirable, even a necessity. I refer particularly to those cases where it is questionable whether the particle has gone clear through the eyeball, and is outside of the sclera, perhaps in the cellular tissue of the socket. The knowledge of such a position is evidently of extreme value, for, as a rule, such cases are best let alone, so far as magnet or other withdrawal is

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concerned, unless the piece is of such large size as to render it dangerous to leave alone; in which case the severance of one of the lateral recti muscles, the pulling forward of the eyeball, the removal of the foreign body by forceps, etc., the replacing of the parts, etc., or the performance of the Kronlein operation must be taken into consideration. In some cases, where there is a doubt as to whether the particle is in the lens or not, exact localization is of value, but, as a rule, if I can have good clear side and front x ray pictures, I feel satisfied to proceed with my operation. I believe that practically all that is really essential to know is, in which quadrant of the globe the foreign body is located. With this knowledge in hand, the exact line for line location of the particle is unnecessary. The interior of the globe is not a vast chamber at the worst, and a strong magnet introduced at either desired quadrant should be able to withdraw a piece of steel without difficulty, unless it is tightly buried in the sclera, under which circumstances we might have difficulty in acquiring success, even with exact localization.

Of course there are other foreign bodies that invade the eye besides iron and steel, and these are particularly unfortunate cases. As magnetic attraction has no influence over wood, copper, glass, etc., they are almost hopeless. Exact localization is important, as the foreign body will have to be removed with forceps. The pupil should be dilated, as the operator must work with ophthalmoscopic observation, provided the invader is in the vitreous chamber. I have from time to time removed such particles, located in the anterior chamber or lens, through the cornea with success, but have invariably failed in saving the eye where I have entered the vitreous chamber through the sclera. I have, I think, twice removed the foreign body, but in every instance the eye has been lost, although I note some success in other operators' reports. I believe, however, that the attempt should be made, and I presume that some successes will be attained. I believe that a very small pair of Noyes's alligator nasal forceps is the best instrument for withdrawing the foreign body. They open only at the end and, therefore, no traction is made on the scleral wound. Of course, of all substances glass is the most difficult to see, either with the x ray or otherwise. It would also be the most difficult to withdraw, but, fortunately, its presence inside the eye must be extremely rare, for, in a rather large experience in injury cases, I have never seen even one instance of such an accident.

The subject of foreign bodies inside the eyeball practically resolves itself into a consideration of steel or iron particles. Fortunately such particles are removable with the magnet, with the single exception of manganese iron fragments, and these are rare.

Much has been written on this subject, and diverse views are entertained by competent and honest surgeons. I feel constrained to give my own views, leaving it with operators to choose between my methods and the methods of others. I am not willing to adopt the dictum of Haab and others, that practically all foreign bodies should be removed through the cornea. In the first place, there are but few genuine, powerful Haab magnets in this country, and it sometimes requires enormous magnetic attraction to pull a piece of steel from its firm bed in the posterior sclera to the anterior chamber. Besides this, I cannot believe it a good plan to pull a good-sized, jagged piece of steel through the lens, iris, ciliary processes, etc., in order to deliver it through the cornea. Of course, Haab lays out a most attractive itinerary, or route, for the removal of the steel, by which it may be delivered into the hands of its captor, without much damage to the eye. The steel (according to Haab) is to be coaxed along the floor of the vitreous chamber, and to be very softly carried over the sensitive ciliary processes. It should then pass through the circular ligament of the lens without doing any particular damage, and then be lifted over the wall of the iris, over the pupillary opening, and then dropped on to the floor of the anterior chamber, from whence it can be extracted by a corneal incision and the magnet. This sounds almost like a fairy tale. It can be practically done by an expert, if the object is very small and comparatively smooth. In my opinion, it cannot be done, even by an expert, if the object is large and sharp. What usually happens is, that the powerful magnet is approached to the eye, when suddenly the object presents itself against, and sometimes through the cornea, carrying with it various portions of the internal anatomy of the eye. I believe that in recent injuries where the cornea is still open, and where the lens is already cataractous, the foreign body may quite properly be withdrawn through the original opening, which may have to be somewhat enlarged, but, where the corneal wound has healed, and especially where no cataract is present, the posterior or scleral route should be utilized for operation. I have laid down the rule that the corneal or anterior route should only be used where the foreign body is in or anterior to the lens. All other particles should be withdrawn through the posterior or scleral route.

Some surgeons believe that if the foreign body is in the lens, it should be left alone, as the lens has no sensory nerves, and the case is practically safe. In this view I do not agree. Such cases sooner or later come to grief, and I believe it is wiser to remove all intraocular foreign bodies, wherever located, as soon as possible, provided it can be done without almost irretrievable disaster to the eye itself. Fortunately, many pieces of steel that enter the eye come fresh from the fire and are aseptic, or they are rendered aseptic by heat derived from the friction of a hammer blow or the rapid propulsion through the air. Nevertheless, they should be removed as speedily as possible.

If the foreign body is located in or anterior to the lens, it can usually be removed by the magnet through a corneal opening of appropriate size. I believe, if it is in the lens, and does not come out readily, it is better to wait a few days—until irritation has subsided, and then make a conventional cataract operation, removing both lens and foreign body. Care should be taken that the foreign body is actually removed, to which end, the magnet, anterior chamber flushing, etc., may be necessary. I believe the results are better in such cases if the lens removal is preceded by an iridectomy. I believe that a serious mistake is frequently made in operating on traumatic cataracts, in assuming that a small

keratome opening is sufficient to afford free exit for the lens matter. Such lenses are seldom as liquid as we are led to expect. Many of them are quite substantial and cannot escape except through a fairly large opening. A cataract incision, whether for a senile or a traumatic cataract, should be ample, to avoid vitreous escape, or enlargement of the wound with scissors, both of which always lessens the percentage chance of a good recovery. Besides this, in almost all such cases, the anterior chamber irrigator will have to be used to flush away all possible lens material, in order to lessen the chances of an iritis. For this purpose a fairly large opening is necessary, not of course as large as for a senile cataract, but fairly large. A Graefe cataract knife may be used, or a large keratome, although the latter requires more force than a Graefe knife. Fisher's retractors are better than a speculum, for they lessen the liability to lose vitreous. Very little pressure on the eyeball should be used by spoons, etc., for in these traumatic cases the hyaline membrane and posterior capsule are usually broken and the vitreous escapes easily. If considerable vitreous is lost, its place should be supplied by the injection into the posterior chamber of enough warm normal salt solution to fill out the globe.

If the foreign body is in or anterior to the lens, it is frequently easy to hold the magnet to the eye, before a corneal incision is made, and attract the object to the floor of the anterior chamber, from whence it can be easily extracted by an incision made at the very bottom of the chamber and the magnet. If the incision is made above the floor of the chamber, the intervening corneal wall may prove quite an embarrassing obstruction for the magnet extraction. The foreign body may pull iritic tissue with it in process of its exit. If the iris is easily replaced, and stays replaced, it may be well to leave it, but, if it proves obstinate, an iridectomy had better be made. If the lens is broken down and soft, the opening should be large enough to facilitate lens removal by pressure, spoons, anterior chamber flushings, etc., in order to forestall, if possible, lenticular swelling, iritis, etc. The removal of intraocular foreign bodies is very interesting work. Each case must be judged by itself, and no hard and fast rules can be laid down for the management of all cases.

Let us now consider those cases where the foreign body is in the posterior chamber. The point of entrance may be through the cornea, sclera, or sclerocorneal junction. If it enters through the cornea, all sorts of corneal, iritic or lenticular damages may be present and each case must be judged by itself and treated accordingly. I have elsewhere recorded, and wish to record again, that I have seen one or two where minute steel fragments have passed clear through the cornea and lens without leaving any evidences of cataract behind. This seems well nigh impossible, but it is true nevertheless. One case, I remember distinctly, where a minute particle passed directly through the lens, leaving a minute track behind. This track subsequently cleared up, and a perfectly clear lens resulted. If the point of entrance is through the sclerocorneal junction, the damage may be similar, but it must not be forgotten that this particular territory is the most sensitive in the eye, and that injuries here are especially apt to produce sympathetic ophthalmia and protracted and unsatisfactory recoveries. I wish to say, however, that while I do not deny the existence of sympathetic ophthalmia, and have the greatest dread and respect for it, nevertheless I can truthfully say that, after a long and active experience, I am sure I have never seen six of these cases. So I cannot be blamed for feeling that the prevalence of this dreadful disease has been greatly overestimated. If the foreign body enters through the sclera, it frequently happens that little damage is done, and certainly, as a rule, there are few external evidences of trouble. A scleral wound and a soft eyeball are perhaps all the visible pathology present. Of course, in some cases of steel invasion, no matter where the point of entrance occurs, such profound trauma is produced that it is immediately evident that the case is hopeless from the start. Under these conditions enucleation should be advised at once; thus saving time, money, and shattered hopes, protracted illness, and semiinvalidism, to say nothing of the possibility of sympathetic ophthalmia. Frequently patients will not consent to such prompt surgery, but the advice should be recorded in writing, which may become useful in the future, for it must be remembered that all such patients are potential plaintiffs in legal proceedings.

After a foreign body has entered the eyeball a thorough examination of the eye should be made. The pupil should be enlarged, and the anterior portion of the eye examined under illuminated magnification. If possible, the anterior of the eye should be carefully observed with the ophthalmoscope, the x ray, and possibly localization should be employed. I do not, as a rule, believe in what might be called magnet diagnosis, that is, the approach to the eye of the strong magnet to see if the steel shows itself, or if the patient experiences any pain. Complications are likely to occur, under such a means of investigation, that will greatly embarrass the surgeon, and lessen the patient's chance of obtaining a good eye. The magnet should not be used until all the evidence is in and the plan of campaign understood.

We should be guided by our x ray pictures when the eye is opened. I am, of course, now speaking of operations through the scleral or posterior route. The incision should be between the superior and external, the external and inferior, the inferior and internal, or the internal and superior recti muscles; in other words, in one of the four quadrants of the eye, indicated by the x ray as the quadrant nearest the location of the foreign body. I pick up the conjunctiva, after local cocainization, near the sclerocorneal junction with forceps, and cut the apex of the conjunctival fold with scissors. I make a slender triangular flap, way back to the *cul de sac*. I close and spread the scissors beneath the flap, so as to thoroughly dissect the conjunctiva from the sclera. I lay back the flap, and I then plunge a Graefe cataract knife through the sclera, far enough back to avoid cutting the ciliary processes. This incision is enlarged backward, at an angle of about 45°, for nearly half an inch, in order to provide plenty of room for surgical procedures and for the withdrawal of the foreign body. If the latter is large, it may be necessary to enlarge the opening with scissors. If the

entrance of the foreign body has made a scleral opening, that is still open, it is often wise to utilize this opening, and enlarge it for the operative procedures. After the opening is ready the magnet—with its strongest point—should be placed in the open wound. I have devised two little nonmagnetic hooks that I place—one in each side of the wound—to open it. They seem to facilitate the withdrawal of the foreign body and are held by an assistant.

It is needless to say that all instruments used in this operation should be nonmagnetic. The point of the magnet should be aimed, as near as possible, at the long axis of the foreign body, as shown in the x ray pictures, for objects are much more readily and harmlessly removed in this way than if the magnet is aimed broadside at the object. We must from time to time be sure the magnet is working, by holding perhaps a pair of scissors toward it to see if the current is on full strength. I have seen failures occur from neglecting this precaution. Sometimes the foreign body fails to present itself at once; it may be stuck in the sclera, or covered with exudate. The current should then be switched on and off, on and off, etc., in order to jerk it loose. It may be well to give the patient a rest occasionally, and remove the speculum from the eye, and then go at it again. If, after giving the case a prolonged trial and no foreign body is removed, we shall have to consider the advisability of introducing a magnetic point inside of the eyeball, as close to the location of the foreign body as we can judge. This is a procedure that some surgeons do readily and more or less fearlessly. I cannot agree with this point of view. I regard the introduction of a magnetic point inside the eyeball as an exceedingly hazardous procedure, only to be done as a last resort, and after all other methods have failed. If, however, it becomes necessary, it should be done with exceeding gentleness and care, and for not more than (let us say) three times. The current should, of course, be on in full force when the point is withdrawn, as otherwise the foreign body might be stripped off at the moment of withdrawal. I have removed some foreign bodies in this way, when other means had failed, but I always felt I was indulging in a dangerous practice.

Occasionally more than one piece of steel will come away. Whether a plurality of pieces entered at the initial entrance, or whether a single piece has broken up into several pieces after entrance, I cannot say, but I believe in the latter view. If we do not succeed in withdrawing the foreign body easily, we should patiently persevere until success or failure is assured. I have sometimes found, in obstinate cases, that the foreign body can be moved by placing the strongest point of the magnet as far into the conjunctival *cul de sac* as possible, at the point where the x ray has located the foreign body, and then gently and slowly move the magnet down to the scleral opening, milking the eye, as it were. This can be done several times, in different locations, and should always be done before a magnet point is introduced inside the eye. I believe that more strenuous methods of procedure, other than those I have indicated in this paper, are unwarranted, and would result in the loss of the eye, almost without exception. I am not unaware of the dangers of removing foreign bodies through the scleral route.

After the foreign body is removed, or we are resigned to failure, the wound is closed. Do not stitch the sclera; it is unnecessary, and, as the sclera is thick and tough, considerable pressure is used in getting a needle through both lips of the incision, and vitreous may be lost. Besides this, part of a suture would of course be left in the vitreous chamber, which would invite intraocular infection if left (as with a catgut suture), or if removed (as with a silk suture), stitching the conjunctiva is sufficient. The apex of the conjunctival flap is so near the sclerocorneal junction that there is not enough conjunctiva to retain a suture. I, therefore, draw the flap forward, and suture the conjunctival triangular and tongueshaped flap to the conjunctiva left on the eyeball, one suture above and one below. This will be quite sufficient. I use fine silk sutures. The recovery after the operation is usually uneventful. The sutures may be removed on the third or fourth day. Of course, some of these cases speedily go to the bad, through iritis, panophthalmitis, etc., and enucleation becomes necessary. Others apparently do well for weeks or months, and then atrophy of the globe, intraocular pathologies, etc., occur, and the eye becomes useless, and may have to be removed. Sometimes the eye is permanently saved, with more or less vision. I have learned to maintain a guarded prognosis until about a year has elapsed. If then the result is good I feel optimistic, but not until then. The trauma and insult to the eye are great where a piece of steel has passed into perhaps the vitreous chamber. It is still more so when the steel is removed by a magnet, and still more so when perhaps further operations, like a cataract or an iridectomy, have to be performed.

The question as to what magnet is used is one that most surgeons view from the standpoint of their own experience. The genuine double ended Haab magnets are very expensive and scarce in this country. They are the most powerful magnets made, and perhaps the best for general use, although, when a magnet point is to be introduced inside the eye, I think some strong hand magnet—like Sweet's—is the best, as it can be more easily and delicately handled. Several substitutes for the Haab magnet have been introduced in America. Heavy magnets are best regarded as stationary instruments. In other words, the patient should sit and approach the instrument, whereas, in using hand magnets, the patient lies on the table and is approached by the instrument. I think on the whole that better work can be done by using a very strong hand magnet, such as Sweet's or Lancaster's, that combine power with flexibility, than by using a fixed magnet such as Haab's. I have used Sweet's instrument for years, and have been well satisfied with it. The chief objection to it is, that it quickly becomes almost, if not quite, too hot to handle. I have covered it with an asbestos overcoat, but the heavy magnet slips in the covering and interferes with the accuracy of its use. I have had no experience with the ring magnet, and therefore can say nothing about it. It undoubtedly possesses great power, that can be graduated to conform with the necessities of the case, and the handles can be easily manipulated.

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Some Problems in Gallbladder Disease; Their Operative Treatment and Complications*

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The differential diagnosis of gallbladder disease from other affections in the upper abdomen is at all times an extremely difficult and absorbing problem both for the surgeon and the internist. It is plainly obvious that a colic in the right hypochondriac region followed by jaundice points to some disturbance in the bile passageways. But when these symptoms simulate the pain of a duodenal or gastric ulcer, a high appendix, or even a stone in the kidney, the rendering of an exact diagnosis becomes increasingly difficult. To associate disease of the gallbladder or the bile passages always with stout individuals past forty, usually good livers, is a fallacy which must not be adhered to very closely, as illustrated by a patient recently operated upon. A woman weighing about two hundred pounds had symptoms resembling attacks of gallstone colic, which persisted for six years. The pain was severe, compelling hypodermics of morphine; at operation we found a pyloroduodenal ulcer of the hard, chronic indurated type, the socalled cured ulcer of the internist.

Cholelithiasis may be found in lean individuals which fact at times adds more difficulties in differentiating between gallbladder disease and pyloric or duodenal ulcers, because in these patients one would expect to find a lesion of the stomach or duodenum. Again a high appendix and gallbladder disease are often taken one for the other. It is at times impossible to differentiate between the two affections until the patient has been anesthetized. Such a case is illustrated in that of a man sent to the hospital with the signs of acute appendicitis. He had been sick several days with pain in the right side of the abdomen a little higher than it is customary to find a diseased appendix. The entire right side of the abdomen was rigid, and not until he was under ether could a large swollen definitely defined gallbladder be outlined. When the abdomen was opened a large hydrops of the gallbladder was revealed. Again a perplexing trilogy of diseases presents itself when it is necessary to differentiate between renal colic, gallstone colic and a high appendix. In gallstone colic the history of the patient may be helpful to a diagnosis when he has had symptoms of a long standing indigestion. In renal colic there are certain urinary reflex pains. However, the physical examination must assist materially in the diagnosis. In gallbladder disease tenderness is found under and just below the costal border; in renal colic the point of greatest tenderness is in the loin space, while many cases arise where it is absolutely impossible to make a differential diagnosis between a high appendix and gallbladder disease.

FOCAL INFECTION

The bile passages, especially the gallbladder, have been found a factor responsible for producing certain myocardial changes and longcontinued disturbances in the temperature balance of the patient. In addition to a prolonged temperature of undetermined cause the diseased gallbladder has given rise to a condition known as an extrasystole of the heart. Extrasystole in some patients is benefited and at times it disappears after the removal of an infected gallbladder. The accompanying cardiograms, Figs. 1, 2 and 3, and histories of two of the patients, were prepared by our cardiographer at the Mt. Sinai Hospital, Dr. Joseph Wolffe. They show definitely the presence of an extra beat which after operation was greatly improved and then gradually disappeared. The patient in case I was admitted to the Mt. Sinai Hospital November 11, 1922. For fourteen months prior to admission the patient noticed that after the ingestion of a rich carbohydrate meal he would have symptoms of epigastric and hypochondriac distress. He also became conscious of premature contractions of the heart. A cholecystectomy was performed; in addition a duodenal ulcer was removed with the cautery and inverted, after which a posterior gastroenterostomy was performed. Numerous subsequent examinations failed to show any evidence of disturbance of cardiac conductivity. The patient in case II was admitted on February 11, 1923. She had many reflex gallbladder symptoms following an attack of typhoid fever twenty years ago. During the last four years she had been conscious of some precordial disturbance. Cholecystectomy was performed, the gallbladder containing many small stones and viscid dark colored bile. The premature contractions disappeared quickly after the removal of the infected gallbladder. The third patient was operated on for Dr. Stambul. The patient was only temporarily relieved by operation. The gallstone attacks started during pregnancy and became especially annoying after labor. There was no question about the immediate improvement in the rhythm of the heart following operation and for four weeks thereafter. It is now stated by her physician that the irregularity has returned.

GLYCOSURIA AND INSULIN

There seems to be a definite relation between gallbladder disease and glycosuria. Many cases could be cited in which a secondary pancreatitis following gallbladder disease caused a definite diabetic state. While the presence of sugar in the urine is no contraindication to operation, there is unquestionably a greater risk in operating on these patients. The preoperative preparation of these patients has always been attended with the maximum amount of care. With the discovery of insulin greater security in operating on these patients can be realized. What a relief to the surgeon to know before operating that these patients are sugar free. While a ketonuria is an additional operating complication one feels more secure when the sugar in the blood and urine is re-

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duced to a small percentage. Probably due to a coincidence the existence of glycosuria has been in many instances accompanied by chronic jaundice due to a stone in the common duct, a hardened head of the pancreas, or to a malignant growth at the papilla of Vater. We can report most gratifying results in those patients with glycosuria who have been prepared with insulin before operation. In a few instances patients who have been operated on have shown no trace of sugar, others have been temporarily relieved, while still others showed no improvement at all.

PROPER METHOD OF PERFORMING CHOLECYSTECTOMY

There are several methods of performing a cholecystectomy which may accomplish the same end but there is a logical method by means of which the operation can be better performed with the least consumption of time. As a result of the examination of nearly five hundred anatomical specimens in the Baugh Institute of Anatomy of the Jefferson Medical College a technic has been developed which in our estimation we consider almost perfect. From a close study of the anatomical relations the removal of the gallbladder from below upward is unquestionably the method of choice. As illustrated in a previous paper the right free border of the gastrohepatic omentum has been opened and a free wide dissection of the ducts and bloodvessels has been made; the cystic duct and cystic artery are clamped separately and divided. When we have removed the gallbladder from above downwards there has not been the same sense of satisfaction as when employing the reverse method.

DRAINAGE

Under drainage we wish first of all to discuss the material used for the ligation of the cystic duct. For years we have used catgut; during the past few months, however, we have been using silk or linen thread on account of a few leakages we had following the use of catgut. Since the adoption of this method there has been no trouble from this source. Catgut is still used in the ligation of the cystic artery. On account of the instability of the ligature material and the possibility of the slipping of a ligature and oozing which must necessarily follow the separation of the gallbladder from its bed we still place a small rubber drainage tube to the site of operation. This tube is allowed to remain five days. It has been our experience that even with the drainage a subhepatic or subphrenic collection may arise after its removal. We can only conjecture what happens in those cases where no drainage has been employed by the surgeon. The symptoms of a subphrenic collection are of much importance and the failure to recognize its existence may cause a fatal termination.

SUBPHRENIC AND SUBHEPATIC COLLECTIONS

In every subphrenic collection following an operation for an upper abdominal condition pain in the shoulder is the constant symptom. Pain in the shoulder is so striking a symptom that we may well call it a pathognomonic sign. It may arise suddenly after operation or there may be entire comfort after operation for several days, a week or more before the symptoms of a collection in the subphrenic space present themselves. The pain varies greatly in degree depending as it does on the amount of the collection, as well as the kind of the infection. It is generally of an excruciating character radiating to the right or left shoulder. Recessions in pain occur but usually it is constant and always worse at night. The expression of the face is characteristic; it is anxious, the eyes are somewhat protruding, glassy, and the patient's whole countenance beseeches one to do something to relieve him of his distress. Respiration is rapid necessitating the patient to sit up in bed. Physical examination will reveal an increase in liver dullness if the collection is confined to the right side, the increase being rather more lateral than medial. On palpation there is an increase in the resistance over the ribs; the hypochondriac region feels fuller as compared with the other side. If much fluid be present the costal border is fused with the surface of the abdominal wall. The excursion on the affected side is limited. The best method to find the exact location of the fluid is by means of the exploratory needle and the x ray, preferably the former. Wherever found a free incision should be made; if located high up it may be necessary to resect a piece of the rib.

Since I published my papers on the anatomical variations in the arrangement of the bile passageways and bloodvessels it has been interesting to note the universal approval of surgeons of this type of work. It has been especially gratifying because it tends to better surgery where so much poor work has been done in the past. The surgeon should possess a knowledge of the anomalies of construction so that when these abnormal conditions are found an intelligent understanding of the field of operation will assist much in the conclusion of the case. An interesting fact has been the comparison of findings in the anatomical laboratory with those found at the operating table. It is now a well known fact that twenty-five per cent. of the cases operated on show some anomalous arrangement of the bile ducts and bloodvessels. The same relationship holds good in the anatomical laboratory. While operating by the open method it is gratifying to be able to recognize the abnormal relations of bile passages and their bloodvessels. Naturally the arrangement most frequently found is the normal relation of the cystic duct ventral and dorsal to the artery, the hepatic artery in close relation to the cystic duct, the cystic artery of great length and caudal to the duct, a rather unusual arrangement, the cystic duct running parallel to the cystic artery, both being quite long, and many other variations.

OBSTRUCTION OF THE COMMON DUCT DUE TO INJURY AND DISEASE

Naturally the caution referred to in previous paragraphs as to the type of operation and the importance of the anatomical studies was for the purpose of eliminating altogether the injuries to the common duct which have been so frequent but which have not been reported as fully as they should have been. Obstruction of the common duct whether due to injury or disease is a serious matter on account of the chronic jaundice which accompanies this condition with its consequent degeneration of the vital organs. Many operations have been devised for the relief of this condition but for the description of its

technic I must refer you to special papers on this subject.

Suffice it to say there are two advocates of the treatment of obstruction of the common duct due to disease, some favoring internal drainage and others external drainage. I mention external drainage merely to condemn it, but there is a wide field of usefulness for internal drainage, the anastomosis, in other words, of the gallbladder and its passageways to the stomach or duodenum. I must repeat what I have said in the past that it does not make any difference whether the stomach or duodenum is used, the ultimate result will be the same, the stomach being tolerant to the presence of bile. In a case just operated on a few days ago for carcinoma of the papilla of Vater and the head of the pancreas the gallbladder was anastomosed to the stomach. There was no vomiting or other gastric distress afterwards.

PREOPERATIVE PREPARATION

The preparation of patients who have chronic jaundice on account of obstruction of the common duct due to injury or disease is of the greatest importance. These cases should have a complete blood chemistry, urinary examination, blood pressure, blood count and coagulation time taken. At least forty-eight hours before operation the patient should receive calcium lactate by mouth or calcium chloride intravenously; he should be digitalized and receive one thousand c. c. of salt solution by hypodermoclisis. After operation the digitalis should be continued and another one thousand c. c. should be administered. A blood transfusion should be given before and after operation when the hemoglobin is low or when the blood coagulation time is much prolonged.

EXPERIMENTAL WORK

We have checked up our work by experiments some of which are as yet unpublished. Especial attention has been given the accidental ligation of the hepatic artery and its dire results following its ligation. It has been definitely proven by us and others that a necrosis and degeneration of the hepatic cells result if the hepatic artery is ligated instead of the cystic. No mistake of this kind ought ever occur if precautions are used in the performance of a cholecystectomy by means of the open method. Ligation of the structures around the foramen of Winslow within the folds of the gastrohepatic omentum belongs to the surgery of the middle ages. Performance of the operation in this way accounts for many of the cases of destruction of the common duct.

CONCLUSIONS

In conclusion I wish to urge:

1. The importance of making a differential diagnosis between cholelithiasis, nephrolithiasis, a gastric or duodenal ulcer and appendicitis.

2. The importance of the gallbladder as a focus of infection.

3. The importance of the preoperative preparation of diabetic patients by means of insulin in cases suffering from disease of the bile passageways.

4. The importance of performing a cholecystectomy by the open method so that every structure can be visualized.

5. The importance of drainage in all cases of cholecystectomy after operation on account of the danger of a subhepatic or subphrenic collection.

6. The importance of possessing a profound knowledge of the anatomical relation of the bile ducts and bloodvessels. Only by this means is it possible to eliminate all injuries to the common duct.

7. It is always desirable to check up our work by means of experimental work on animals. In this way many surgical problems can be made clear.

Drowsiness

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Drowsiness is one of the annoying symptoms often noted in a routine ophthalmological practice. Affections of the conjunctiva and marked reduction of vision in both eyes are usually the accompanying ocular conditions observed that account for this complaint. An existing uncorrected error of refraction *per se* is seldom found to be a factor in its production.

After eliminating present and past constitutional dyscrasias that may account for drowsiness, the problem is reduced to a solution of possible ocular factors contributing to it.

An unpolished or uneven surface of the palpebral conjunctiva is found to be the chief source of drowsiness, although the low grade catarrhal affections of this membrane are observed most frequently. The low grade catarrhal affections producing drowsiness seldom present any external evidence of disease, but by everting the lids, the conjunctiva appears dryer and redder than normal and upon close inspection the surface is studded with minute fine points. Occasionally, a low grade catarrhal affection of the palpebral conjunctiva has extended to the margins of the lids and by viewing the eyes externally, the margins appear redder than normal; a history of small hard crusts found at the inner canthi in the morning is usual when this condition obtains. Drowsiness usually disappears when the affected conjunctiva is polished by a course of treatments. Many patients who consult the ophthalmologist first hand attribute their drowsiness to eyestrain and feel that correcting glasses will remedy the trouble, but it is surprising to note how few of such patients who complain of drowsiness of itself have any error of refraction when estimated under the effect of a cycloplegic.

Complaints of headaches combined with drowsiness are not uncommon. These symptoms will not disappear by wearing correcting glasses when they are found necessary, but will nearly always pass away by administering successful treatment to the affected conjunctiva additionally. Among the less frequent affections resulting in unpolished and uneven surfaces of the conjunctiva, are deeply seated calcareous deposits, overfilled meibomian ducts, chalazia, post results of trachoma, end processes of operations upon the lids, enlarged pinguecula, low grade scleritis and episcleritis, pterygia and neoplasms. Following the reduction of the above affections that had been accompanied by drowsiness, it was noted that this symptom usually disappeared. Drowsiness is a constant complaint when fully developed pterygia are present, but at this time we see very few of such cases in this locality.

Drowsiness is a frequent complaint when vision is markedly reduced in both eyes and unattended by pain in the eyes. The usual painless ocular affections that reduce vision in both eyes are: cataracts, optic atrophy, low grade optic neuritis, retinitis and choroiditis, degenerations in the fundi, and dyscrasias in the media.

Many who have had lenticular opacity, sufficient to reduce vision considerably in both eyes, suffer from excessive drowsiness and I have observed this symptom disappear following a successful extraction of a cataractous lens when good vision was obtained after the operation. Those who employ the eyes for continuous close work, apply most frequently for relief of drowsiness as they find it embarrassing and at times impossible to keep awake during working hours, although they are in good health, live regular lives and have plenty of natural sleep at night.

SUMMARY

Drowsiness is registered as a most annoying symptom at times and as such deserves a close search for its possible source. After the elimination of possible constitutional disturbances that might produce it at the time of consultation and previous medical conditions of which it may be a sequel, a study of possible ocular factors that create drowsiness, deserves our close attention. The usual ocular factors responsible for drowsiness in my experience are: a, roughened and uneven surfaces of the conjunctiva from whatever cause unattended by pain in the eyes; b, marked reduction of vision in both eyes unattended by pain in the eyes.

Congenital Dislocation of the Hip

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ETIOLOGY

Nothing better on the etiology of congenital dislocation of the hip has been offered than the speculative discourse in Gross's *System of Surgery*, page 38, volume 11. This chapter is well worth reading, although it gives exactly what we know today, which is nothing definite.

DIAGNOSIS

Before starting in with the actual diagnosis of congenital dislocation of the hip, I wish to urge all members of the profession to use their influence to impress on the younger men in the profession that they must inspect most carefully every infant that comes into their hands, stripped naked, and scrutinize carefully each and every part of the child's body and limbs. It is only by this means that they can acquire skill in readily detecting abnormalities. By detecting deformities as early as possible, the general profession can increase the efficiency of the surgeon in his attempts at restoration.

It is not difficult to make a fairly accurate diagnosis of a congenital dislocation of the hip without a radiogram. To be sure, the clinical diagnosis should be verified by proper radiographic investigation. By placing the naked infant on its back on a table, and then comparing the length of the lower extremities in the extended position, it is easy to see whether or not there is any shortening. Grasp the pelvis in one hand so as to hold it firmly on the table, while with the other hand, grasp the femur just above the knee, and then see whether or not the head of the femur can be pushed upward on the dorsum of the ilium, and dragged downward again to its normal position. If there is a dislocation, the head of the bone can be pushed upward and back for from one to two inches; while on the normal side it will be found that the head of the bone is anchored to the acetabulum, so as to prevent abnormal mobility. By placing the tips of the fingers over the medgluteus medius region, and then rotating the femur with the other hand, the head of the femur can be palpated underneath the gluteal muscles, moving in abnormal fashion when dislocation is present.

In studying a radiogram of unilateral dislocation, one of the first things to be observed is the great discrepancy between the innominate bones of the two sides. On the dislocated side, the innominate bone in its lower two thirds will be greatly lacking in development. The earlier the dislocation occurs, the greater will be the lack of development. The femur will be found smaller in diameter, the great trochanter, perhaps, not fully developed as it should be at that age. The epiphysis of the head of the bone will be almost invisible because of lack of mineral salts, and much smaller than that on the normal side. The head of the dislocated femur will be found to be from one to two inches upward and backward from its proper location.

It has been known, since this condition was first recognized, that it occurs much more frequently in girls than in boys. In the time of S. D. Gross, there were about six and a half times as many girls afflicted as boys. Other authorities give the ratio as nine girls to one boy. In my own experience, I have

seen eleven girls to one boy with dislocation of the hip. When it occurs in children old enough to walk, they will be observed to incline the pelvis forward on the thighs, compelling them to throw their shoulders back, producing marked lordosis in the lumbar spine, and to walk with a peculiar waddling gait. In extreme cases of bilateral dislocation, the child cannot walk without resting one knee against the other and waddling along like a duck.

In the adult, who has never been treated, it is easy to see the upper extremity of the femur punching up loosely under the gluteal muscles every time weight is born on the corresponding limb.

PROGNOSIS

In unilateral cases, properly reduced at the proper age, ninety per cent. of all patients should recover with perfect function, and fifty per cent. ought to recover with well nigh perfect anatomical restoration of the joint. In bilateral cases, much depends on the temper of the patient and the cooperation of the parents. If a child will learn to walk while in the plaster of Paris dressing, and persistently get about, quite as good results are possible as in the unilateral cases.

Most children have not the pertinacity to stick to walking, and sit down and do nothing. In such cases, the results are variable. However, it is possible to get an anchorage of the head of the bone to the pelvis, and give to these children some sort of hip joints. They may limp somewhat, but they will be comfortable throughout the rest of their lives.

Many more men ought to know how to take care of congenital dislocation of the hip than are now engaged in the work. On the other hand, there are about ten times too many men meddling with congenital dislocation of the hip without ever having had any sort of adequate training.

One hip out of five hundred requires an open operation. By cutting into the hip, the surgeon still further weakens the already half developed tissues. It is unnecessary and indicates lack of understanding, or lack of training in this work, or both.

There is no semblance whatsoever between this condition, and traumatic dislocation of the hip. The individual who says he reduces these hips, and then lets them go, certainly has never given careful scrutiny to a radiogram of a congenital dislocation of the hip, or he would see why such treatment is worse than folly.

My conclusions are based on twenty years' experience, in addition to which I had the privilege of working with the late Professor Albert Hoffa, of Berlin, for five months. During that time, he averaged seven cases a week. He also showed us many cases which he had returned to him every four weeks —such cases covering a period of two years. Every third month he had a radiograph of each of these cases. My prognosis is based, not only on my own experience, but on the results obtained by Hoffa, in his clinic at the University of Berlin.

TREATMENT

I shall not refer to what others have said or written, about at what age treatment should begin. Experience with a large number of cases has taught me that eighteen months from birth is the best time to reduce these hips.

By effecting reduction at this age, we avoid distortion of the head and neck of the femur by pressure against the more or less flat surface of the dorsum of the ilium underneath the strong gluteal muscles. We prevent stretching and changing of the capsular ligament, and also other changes about the acetabulum. Also we prevent much of the shortening and structural changes in the adductor group of muscles, which, as time goes on, adds greatly to the difficulty of reduction.

In some of these patients at eighteen months, it is possible to place the head of the femur in the acetabulum, without anesthetic and without pain. However, it is not possible to relax the muscles and put the hip in exact position without an anesthetic. These hips, at this age, can be so easily reduced, that there is very slight traumatism. There is little or no risk from manipulation, and within a few days, the child can be up and walk about with a plaster of Paris dressing.

The adductor muscles should be so relaxed that the outer side of the knee will lie on a plane with the sacrum when the child is lying on its back on a table. The femur must be placed at a right angle to the long axis of the spine.

When the head is in the acetabulum, it can be readily palpated just above the adductor tendons, while the femur is rotated by the opposite hand. The application of the plaster of Paris is of the utmost importance. The grossly careless and sloppy method in applying plaster over an indifferently applied lot of sheet wadding is a parody on plaster of paris work in these cases.

A piece of stockinette shirting, long enough to make a union suit for the child, should be had. A trouser leg is cut from this for the extremity involved. The upper part of this is fastened at the top by straps of gauze pinned over the shoulder like suspenders. The trouser part is smoothly tacked in place around the thigh, and to a point below the knee. Next, a sheet of three eighth inch white wool felting is cut and shaped so as to make a clout for the child's trunk and a trouser leg for the thigh to the knee. This is cut and shaped so as to stitch smoothly around the child's hips and thigh like a well fitting breech clout. A pad, about three by four inches, with the corners rounded, and the centre cut out like a doughnut is placed over each anterior superior spine of the ilium to prevent pressure sores. The surgeon will now feel to see that the head of the bone is still in the acetabulum, and adjust the child's body on a pelvic rest with the shoulders elevated, and assistants holding the legs and body in proper position. He then proceeds to put on the plaster. The plaster should extend up to the level of the ninth rib. It should also extend to the knee, but not below it. Across the groin a piece of yucca-stem wood should be incorporated in the plaster to reinforce it. After having trimmed the plaster of Paris dressing so as to provide ample clearance about the perineum and back of the knee, the stockinette shirting should be reversed on the outside of the plaster dressing and stitched firmly so as to make an outer covering. It has been urged that these little folks soil the dressing and stain it with urine so as to destroy the dressing in a short time. This can be obviated by covering the dressing with stork

sheeting stitched in place so as to cover the plaster of paris at exposed parts. This dressing should remain in place for three months, during which time the child should be urged to walk.

A raised shoe two inches in height should be placed under the foot on the affected side. Experience has taught that two inches is about the proper height for the best results.

At the end of three months, the dressing should be renewed with the hip in the same position. At the end of six months, the hip should be tested with the dressing removed to see whether or not it is safe to bring it into the modified position.

If, on cautiously bringing the femur down from a position at right angles to the long axis of the spine, we encounter some resistance to adduction, we may know that the hip is ready to be brought into the semiextended position. We may feel encouraged that we are going to have a good result also. The hip, under such circumstances, is placed in plaster at an oblique angle to the long axis of the spine, and left for three months. At the end of that time, it may be well enough to permit the child to walk with a plaster of Paris girdle, or, it may require three months longer in the semifiexed position.

This is a matter that requires both judgment and experience to learn to do readily. We may judge somewhat by the radiograph made for diagnostic purposes. If there has been an unusual deviation from the normal due to arrested development, we must keep the limb in restraint a much longer time than would otherwise be necessary.

The plaster of Paris girdle is my own contribution to the treatment of this condition. It is merely a corset, not as long as would be required for injuries to the spine, and coming well down over the great trochanter on each side. It is applied over a three eighth inch wool felting so as to prevent pressure sores on the trochanter, and other bony parts. With this, I let a child run freely. It prevents redislocation. I keep this girdle on for from six to twelve months after removing the restraining plaster of Paris spica.

I have a radiogram of a patient of mine, now twenty years of age, whose hips I reduced before she was two and one half years of age, which shows normal restoration of the hip joints. This young lady had both hips dislocated, and had the most exaggerated deformity, as a result, of any child I have ever seen. Now she has two very perfect hip joints. She was a very successful basket ball player during her high school course.

There is no magic, no abnormal skill required in this work. However, it must be learned exactly as a mechanic would learn any other part of a trade. After having learned the mechanical technic, he must adhere to that absolutely in detail, and then there is no reason why his results should not be good in nearly all cases.

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An Effective Method for the Treatment of Acute Middle Ear Infections and the Prevention of Mastoiditis

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It is a truism to say that every case of middle ear infection is a potential mastoiditis. As is well known numerous cases of otitis media are accompanied by early signs of mastoid involvement, as evidenced by tenderness of the mastoid process and later by sagging of the posterosuperior portion of the drum. These are the socalled cases of threatened mastoiditis. If to these be added continuous pain accompanied by insomnia, and a positive culture from the ear, the diagnosis becomes a certainty. In the minds of many surgeons the indications for operation are then imperative, but it frequently happens that despite the definite clinical picture, operation reveals no involvement of the mastoid cells and only infection of the mastoid antrum. The surgeon then justifies his precipitate operation on the score of prevention and on the further claim that the antrum is best drained from behind.

It is conceded that the most important question of midde ear infection is one of drainage. During the past several years the writer has tried by various means to facilitate this drainage and thus prevent the stagnation of pus with consequent infection of the mastoid cells. It is well known that mere incision of the drum is not always sufficient to establish thorough drainage. This is explained by the anatomical configuration of the middle ear. The floor of the middle ear is two or three millimetres lower than the lowest part of the drum membrane, so that even the most extensive incision will not reach to the dependent portion of the tympanum. There is a similar dipping of the floor of the antrum below the aditus. It is obvious therefore that no thorough drainage is possible by means of incision alone, nor is irrigation of the external auditory canal capable of doing more than the mere washing out of the pus. The Hays suction tube is simply a substitute for irrigation but does not materially aid drainage, although its aim is to do away with pressure from without. Mastoidectomy on the other hand is an operative attempt to remove pressure from within, for the purpose of preventing extension of infection. To facilitate drainage from the dependent portion of the tympanum and reduce pressure from the vault to the antrum the writer has devised a vacuum suction method as a substitute for the removal of pressure by operation.

The principle of this method consists in the creation of a vacuum in the external ear canal, which in turn draws out the pus from the tympanum and reduces the pressure within the middle ear. For this purpose a special tube was devised (Fig. 1). The tube is used in connection with a Yankauer suction

apparatus. The end marked A is inserted in the ear, firmly enough to make the external canal air tight. The finger is placed on end C to create a vacuum while suction is exerted by the Yankauer apparatus at B. As soon as enough vacuum is produced the patient will begin to wince with pain and the finger is removed from C. The operation is repeated several times. Inspection of the ear then shows that the canal is full of pus, obviously this pus must have come from the tympanum.

In addition to the induction of a vacuum and the removal of the pus thereby, further drainage can be obtained by changing the position of the head. As stated above, the tympanum with the head in the vertical position is lower than the lowest portion of the drum. If the patient is in a horizontal position and the head tilted the floor of the tympanum and the antrum are tipped and the pus contents are drained by gravity. It is therefore obvious that it is necessary to have the patient both during treatment and in the intervals with the head in a horizontal position. It is evident that the two factors in the matter of drainage and removal of pressure are the vacuum and gravity principles. The creation of the vacuum also induces a transitory hyperemia, which is probably beneficial.

For the actual procedure a long incision is made from the lowest portion of the drum to the superior wall of the canal. In withdrawing the knife the incision is extended one quarter of an inch along the superior wall. Where there is marked mastoid tenderness, a short posterosuperior cut is made so that a Y shaped incision with a V shaped flap results. This ensures better drainage from the antrum. After the two incisions are made, we proceed as above with the induction of a vacuum. As after treatment the following prescriptions are given:

I.		II.
Sodium Chloride	0.30	Sol. Argyrol 10-20% 16 c.c.
Sodium Citrate } Resorcin }	aa 1.20	To be used as nose drops
Aqua dist.	30.00	
To be used as ear drops.		

Prescription No. 1 is dropped into ear canal to produce osmosis, and the argyrol in both nostrils to disinfect the nares and the eustachian tube. For the creation of a vacuum an apparatus (Fig. 2) is improvised for the patient to use at home. The air from the bulb is expressed, the tip of the glass nozzle is inserted into the ear canal and allowing the bulb to expand a vacuum is produced. An ice bag to the back of the ear is also given when mastoid tenderness is elicited. The icebag is applied constantly for twenty-four to forty-eight hours or until tenderness subsides.

Thus far I have treated several hundred cases of middle ear infection with most satisfactory results. In this group there have been numerous cases which were definitely diagnosed as acute operative mastoiditis and others which were declared by competent otologists to be in urgent need of operation.

While I am not willing to make wildly enthusiastic assertions about the method of treatment, I can assert that since I have employed it I have prevented mastoiditis and saved from mastoidectomy patients who were about to submit to operation.

To illustrate the effectiveness of this method the following cases are reported:

Case I.—L. J., fifteen years old, was seen on March 17, 1922. He complained of severe pain in the left ear for five days and inability to sleep. Mastoid tenderness and bulging of the drum were present. Paracentesis was performed under gas-oxygen anesthesia. Good drainage was established but the symptoms were not relieved. March 19th, a Y incision was made and better drainage obtained. March 20th, no marked improvement. A radiograph showed haziness of the antrum and septa throughout the mastoid process. There was no evidence of absorption. March 22nd, the patient not feeling better consulted a Brooklyn otologist who advised a mastoid operation. March 23rd, a second x ray picture showed progressive pathology manifested by an increase in the haziness. March 24th, patient consulted a New York ear surgeon who after raying the patient for the third time strongly advised mastoidectomy. The appearance of the drum, at this time, showed less sagging and the deafness was decreased. Upon the finding of these changes the patient was advised to continue under the vacuum suction treatment. March 25th, patient had a comfortable night. Pain, headache and tenderness decreased and thereafter continued to improve until completely free of symptoms. April 16th the patient was discharged as cured.

Fig. 1.—Improvised vacuum apparatus devised by author.

Case II.—R. S. was seen on March 3, 1923. Following an attack of influenza she was suffering from pain in the right ear for two days. She also complained of headache and inability to sleep. Examination revealed considerable tenderness of the right mastoid and bulging of the drum. Myringotomy was performed and the vacuum suction treatment was instituted. An ice bag was applied to the back of the ear. March 4th, right ear was draining freely. Mastoid tenderness persisted. Icebag continued. March 5th, patient spent a restless night and complained of headache. Sagging of the drum noticed. The Y shaped incision made. Radiographs showed moderate haziness of the cellular septa and a decrease in the illumination of the antrum. A smear showed a moderate number of pneumococci. March 6th, the patient feeling bad consulted an ear surgeon of repute. She was advised to go to the hospital for a probable mastoidectomy, but refused to do so. March 7th, another paracentesis was made and the vacuum suction applied. This was followed by an improvement in the condition of the patient. For a few days she felt better and the tenderness was markedly reduced. March 14th, headache, insomnia, and bone tenderness returned. A fourth paracentesis was done. This was followed by better drainage. The patient felt better for two days. March 16th, the headache and the pain in the ear very severe. Bone tenderness increased. A second radiograph showed an increase in the haziness and a beginning absorption of the septa. Vacuum suction was continued and on April 10th the patient was discharged as cured.

Practical Therapeutics

NONSPECIFIC THERAPY IN ERYSIPELAS

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In the treatment of erysipelas of the face stress must be laid on the stimulation of the defensive forces of the system to a maximum, in order to counteract as far as possible the effect of the streptococcic toxines. The fact that a toxin formation occurs in streptococcic infections has been proved beyond doubt, though the quantities are so small and their peculiarities so problematic that we have not yet succeeded in using them for passive immunization purposes. On the other hand, investigations, chiefly of Kolle and Schottmueller, have proved that the injections of a streptococcic serum frequently exert a powerful influence on furunculosis, erysipelas and other streptococcic disturbances. Long before the era of nonspecific parenteral protein body therapy, Kolle already drew attention to the fact that the serum of the human body as such possessed antistreptococcic qualities.

Since recent advances made in our knowledge of nonspecific therapy, we can understand why the results obtained with injections of streptococcic serum in the corresponding diseases varied so much and why in particular it was not possible to prepare a homogeneous serum which guaranteed more or less the same reliable effect in each case. These streptococcic serum injections we know now were strictly nothing but a different form of parenteral protein body therapy or of the nonspecific stimulation therapy in general. Recent investigation, particularly with protein bodies, has shown, furthermore, that physical processes more than chemical alterations account for the change in the condition of the blood plasm which in its turn exerts the impeding effect on the development of the streptococci. This explains also why a prolonged immunity could not be obtained in this disease, as the change in the physical condition of the blood quickly turned back to the normal.

During the past few years the control of the sinking velocity of the red blood corpuscles has furnished a practical means for judging both the biological condition, the reactivity of the infected system, and the effect of the applied therapeutic measures. We know that a pronounced increase of the sinking velocity of the red cells occurs chiefly in acute inflammatory processes with rise in temperature, also in processes in which a sudden resorption of large masses of cell protoplasm takes place, and furthermore in chronic inflammatory alterations, which apart from subjective disturbances need not cause any visible tissue alterations and yet may conceal an extensive inflammatory process without necessarily causing rise in body temperature. With the streptococcic disorders in question, and in particular with erysipelas of the face, the sinking velocity of the red blood cells is an exact measure for judging the defensive reaction of the system. It is a poor sign if no increase in the sinking velocity of the red cells takes place in a case of erysipelas in which the general constitution is involved. These are in fact the cases which demand immediate stimulation therapy.

On the other hand, the reaction also furnishes a good measure for judging whether it is advisable to increase the strength of the stimulation in a given case or whether the reduction of the sinking velocity of the corpuscles makes an interruption of the stimulation necessary. It is probable that these alterations in the sinking velocity of the red cells are due to an alteration in the electric charge of the corpuscles (Fahraus). Upon the addition of a precipitating electrolyte, e. g., after the injection of a strong protein stimulant, the magnetic forces outweigh the discharging forces, with the result that a conglomeration and sedimentation of the blood corpuscles take place.

Of the nonspecific stimulants which have a decided influence on the sinking velocity of the red cells the protein preparations have proved the most effective. Schmidt used ordinary milk for the purpose originally, which, however, did not always prove reliable, for which reason milk albumen solutions were prepared, and actually furnished better results. Now it has been shown (Zimmer) that there is a distinct difference in the effect of nonspecific protein preparations depending on whether they have been heated before injection or not. Thus, if a casein solution is heated a short time only it may retain its full efficacy; if the same preparation is heated for several hours it will be found to have lost its effect.

In accordance with our conception of the purely physical alteration of the condition of the blood plasm, diluted solutions of casein will not be borne as easily as concentrated solutions. The five per cent. solution of casein has in fact proved the best and most effective for all purposes. As the treatment of erysipelas requires quick and energetic stimulation of the protoplasm of the bodycells those nonspecific stimulants will be preferred which have a quick action. Furthermore, the intravenous mode of injection will also be preferred, as experience has shown that the stronger effect of a nonspecific stimulant is attained by way of the veins than by intramuscular injection (buttocks). To avoid overstimulation, that is, a possible "proteinogenous tiring," in extreme cases a "proteinogenous cachexia" of the system, the control of the sinking velocity of the red cells and the blood picture will make it possible to determine the stage when further stimulation is contraindicated. While no hard and fast rules can be laid down, it may be said in general that the older the process and the less acute, the smaller the stimulating dose should be. An acute case of erysipelas, therefore, would demand heavy stimulating doses.

RESULTS

The results obtained in the treatment of two hundred cases of erysipelas of the face led us to support the nonspecific therapy by specific measures. Thus, intravenous injections of salicylic acid preparations and iodine compounds have proved effec-

tive, the latter probably partly on account of their nonspecific constituent.

We have seen less benefit from specific antistreptococcic serum as the antitoxin content depends too much on the particular animal employed in the preparation and also seems to fluctuate with the particular strain of streptococci used. The effective support, however, obtained from the application of red light rays to the erysipelatous skin surface must be mentioned here. The antiphlogistic influence (2) of the long wave rays in many cases helps to shorten the duration of the disease and particularly helps to allay the sensation of tension and irritation of the skin.

SUMMARY

Energetic nonspecific stimulation supported by red light treatment are particularly indicated in erysipelas treatment. Specific sera promise little, as the antitoxin content fluctuates with the particular strain of streptococci and the animal used in the preparation.

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THE SURGICAL TREATMENT OF OZENA

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Of all distressing nasal diseases, ozena ranks first in antiquity, intractability and obnoxiousness. The antiquity is demonstrated by Jonathan Wright (1) who found the following passage in the Kathubot treatise of the Talmud; "Samuel says that the polyp shows itself by a bad smell of the nose," and the Talmud was compiled during the first four centuries of the Christian era. The intractability of this condition was shown by Celsus in his *De Medicina* (2) where he says; "It should be recognised that it is hardly possible to cure this disease," and Celsus lived in the second century. The obnoxiousness of ozena is vouched for by the patient and his family, his friends and all who come in contact with him, for not only is the fetor a source of personal affliction, but a cause of making the sufferer loathsome to all about him. Polypi, septal deviations, hypertrophied turbinates, exostoses and sinus disease *per se* may cause nasal obstruction and painful subjective symptoms, but ozena will cause all these, and in addition, because of the disgusting fetid odor, exiles the sufferer to social isolation.

Unfortunately the progress in the treatment of this affliction since the time of Celsus has not been very marked, and, generally speaking, his gloomy prognosis is as true today as it was then. However, there is a certain type of case in which operative intervention will cause a marked alleviation of the symptoms and often a complete cure; and because of the success of the treatment in these cases, this paper is presented.

The success of the treatment depends upon the proper selection of the case which, in turn, depends upon the etiology, and this is often very difficult to determine. It must be understood that ozena is really a symptom and not a special disease. It is the end process of an atrophic rhinitis, but inasmuch as ozena is often not present in atrophic rhinitis, the cases presenting this particular symptom may be considered separately, at the same time fully recognizing the association of ozena and atrophic rhinitis. The etiology is conveniently classified in the following:

ETIOLOGICAL CLASSIFICATION OF OZENA.

I. General.—a. Malnutrition. b. Constitutional diseases. c. Physiological atrophy of old age.

II. Local.—a. Congenital malformations. b. postoperative atrophy. c. Mechanical obstruction. d. Infections and sinus diseases.

III. Neurotrophic.

Malnutrition is commonly observed in patients suffering from ozena. Poverty and unsanitary conditions are common associates. Ozena is a disease most often seen in clinics and but infrequently in private practice. According to Goodale (3) it is most common between the ages of five and nineteen, and is twice as frequent in females as in males. Lack (4) found in 150 cases that nearly three fourths of the patients were females and just over one fourth were males. Gerber (5) gives the proportion as 293 females to 117 males. Wyatt Wingrave's (6) figures as to the age at which the disease sets in are interesting. In a series of sixty cases he found that six commenced under nine years of age, twenty-eight between nine and fifteen, nineteen between fifteen and thirty, and seven over thirty. Ozena is a disease of youth. Chlorosis is often associated with it. Perhaps this is the reason for the increased incidence in females, chlorosis being such a common disease in girls of that age. Syphilis and tuberculosis have been described as causes, but the majority of modern observers Moure (7) and others state that most of the cases of ozena occur in otherwise healthy individuals. The physiological atrophy is concomitant with old age and is a part of the general atrophy throughout the body.

Among the most common congenital malformations are defective development of the inferior turbinates, shown by Zaufal (8), abnormal width of the nasal fossæ, reported by Meisser (9), extreme shallowness of the nares, demonstrated by Sauvages (10), short septum, or short nasal fossæ, noted by Hopmann (11), and depression of the nasal arch, with wide fossæ, described by Gerber (12). Atrophy following nasal operations involving extensive destruction, especially of the inferior turbinates, is not an uncommon etiology. The mechanical obstruction is caused by adenoids, as shown by Grunwald (13), septal deviations, or hypertrophied middle turbinates. Berliner (14) believes that the enlarged middle turbinates press against the septum, cause a stagnation of the nasal secretion, with a consequent atrophy of the mucous membrane, and that the fetor is due to the contact of the air with the stagnant secretion.

Among the infections, purulent rhinitis is of great

importance. Moldenhauer and Bosworth (15) believe that all cases of ozena originate in the purulent rhinitis of childhood. Shurly (16) states that he has never seen a case of ozena which originated after twenty years of age that was not syphilitic, and the syphilitic type of ozena is now recognized as a distinct entity, and as a rule, is not included under the head of the ordinary atrophic rhinitis, which is now being considered. Sinus disease as a cause of ozena has come to the fore in recent years. The recognition of sinusitis as an etiological factor is concomitant with the progress made in the study of the accessory nasal sinuses. To Carl Michel (17) belongs the credit of having first impressed the profession with the importance of the accessory sinuses as a cause of ozena. This was further emphasized by Tissier (18) who laid stress on the diseased ethmoid cells, although the frontal and maxillary sinuses were found to be also involved. In a series of twenty-five cases of ozena, Grunwald (19) found suppuration of ethmoid cells alone in six, in the ethmoid cells and other sinuses in four, in the sphenoidal sinus in three, in the antrum in one, in the frontal sinus in one, and in multiple sinuses in three. Bronner (20) found suppuration of the maxillary sinuses in about one quarter of his cases. This type of ozena due to sinus infection holds out the greatest prospect of cure.

The neuropathic theory of causation can be dismissed with a few words, being based on the fact that improper innervation from the trifacial nerve causes a nutritional disturbance in the nose. Zuckerkandl, however, believes that the causation is inflammatory and the procedure is first an hypertrophy and then an atrophy, and that the fetor is due to the degeneration of the columnar epithelium, a process similar to that which occurs in catarrhal inflammation of the lining of the uterus.

From a therapeutic viewpoint ozena may be considered under two categories, surgical and nonsurgical. The surgical types are those due to mechanical obstructions, diseases of the accessory nasal sinuses, and some of the varieties of the congenital malformations. The nonsurgical types are those due to malnutrition, constitutional diseases, the physiological atrophy of old age, and postoperative atrophy. Some of the postoperative atrophies do at times respond to surgery of the inferior turbinates, as shown by the paraffin injections and resection and fracture of these structures. The type of ozena that gives the most satisfactory results after operation is that due to diseases of the sinuses, or to a mechanical obstruction caused by a deviated septum, or hypertrophied middle turbinates. To illustrate the effect of treatment in these conditions, the following cases are presented:

Case I.—Anna R., eighteen years old, had had a bad smell from the nose ever since she could remember. She had used various washes, oils, and vaccines with no beneficial results. Her physical condition was good, with the exception of carious molars and a moderate degree of pyorrhea. The Wassermann reaction was negative and the blood count showed no anemia and particularly no chlorosis. Examination of the nose showed polypoid degeneration of the middle turbinates on both sides, hypertrophy of the inferior turbinates, thick, foul smelling greenish crusts over various parts of the mucous membrane and a thin white streak of pus over the anterior end of the middle turbinates. This streak reappeared after being wiped off. There was no pain or tenderness over any sinus.

The polypoid anterior ends of the middle turbinates were removed, and there followed a visible discharge of pus. The ethmoid cells were exenterated. The patient was then given an alkaline nasal douche consisting of carbolic acid twenty drops, sodium biborate and sodium chloride each equal parts to make three ounces. Half a teaspoonful of this powder was dissolved in hot water and the nose was syringed three times a day. Care was taken to keep the head down so that the water did not trickle back through the eustachian canals into the ears. A soft all rubber ear syringe was used. It is preferable because the soft rubber bends and can do no injury to the parts it comes in contact with.

At the end of one month the nasal irrigations were discontinued. The fetor was gone, and there was some improvement in the sense of smell which had been entirely lost. In addition, there was improved nasal respiration.

Case II.—Samuel L., sixty-five years old, complained of headache, loss of the sense of smell and bad odor from the nose. The fetor had existed since childhood, the headache was of about ten years' duration and the anosmia of about five years' standing. The patient's physical condition was good, except that he had a cataract on one eye. The Wassermann reaction was negative and the blood count was normal. Examination of the nose showed an almost complete obstruction due to polypi. The middle turbinates could not be seen, due to the obstructing polypi. Thick, foul smelling greenish crusts covered the mucous membrane. Röntgenography showed shadows over both ethmoid sinuses. The polypi were removed, the anterior ends of the middle turbinates were cut off, and the ethmoid cells were exenterated. Upon curretting the ethmoid cells there issued a free discharge of foul smelling pus. The patient was then placed upon the alkaline wash previously described. At the end of three weeks there was no vestige of an odor, the headaches had ceased and the sense of smell was returning. The patient feeling relieved ceased coming and further trace of the case was lost.

Case III.—Helen P., twenty-four years old, has been wandering from physician to physician and from clinic to clinic for the past six years seeking relief from a very distressing fetor. She had used nasal douches, oils, vaccines, electricity, and topical applications with no improvement. Her physical condition was good. The Wassermann was negative and the blood count was normal. Examination of the nose showed the characteristic thick, foul smelling, greenish crusts and a thin white streak of pus over the anterior end of the middle turbinate on the right side. The left nostril revealed a normal rhinoscopic picture. The septum was moderately deviated and the turbinates on the right side appeared normal. Röntgenography showed shadows over the right

frontal and right ethmoid sinuses. The ethmoid sinus on the affected side was opened up and the cells curetted. Free drainage from the frontal sinus was established. The patient was then put on the alkaline wash and at the end of one month the fetor was entirely gone.

Case IV.—Mandel S., nineteen years old, student, had had a fetor nasi for at least three years that he was aware of. Previous to that time, ever since he had been a child, he had been subject to attacks of acute rhinitis. His physical condition was below par. He was under weight, rather poorly nourished, sallow complexioned and his blood count showed a secondary anemia. The Wassermann reaction was negative. Examination of the nose showed a thin white streak of pus coursing along the anterior end of the right middle turbinate. The mucous membrane of the septum and of the lateral sides of the nasal cavities was covered in various places by the thick, greenish foul smelling crusts. Otherwise the rhinoscopic picture was normal. Röntgenography showed a definite shadow over the right ethmoid sinus. The ethmoid sinus was opened up and the cells exenterated. As this was being done there was no visible discharge of pus but there was a marked increase in the stench. The alkaline wash was used for two weeks and at the end of four weeks no odor at all could be detected.

SUMMARY.

I wish to reiterate that in ozena we have a most difficult and baffling disease to cure, but there is one form of it, namely, that due to sinus disease which is amenable to treatment. Medical means, washes, oils, vaccines and topical applications are practically useless, so far as a permanent cure is concerned. The only form of treatment in this condition is surgical and based on the well established and time honored principle that "wherever there is pus evacuate."

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231 East Eleventh Street.

ARTERY FORCEPS FOR TYING OFF BLEEDERS IN DEEP, NARROW CAVITIES.

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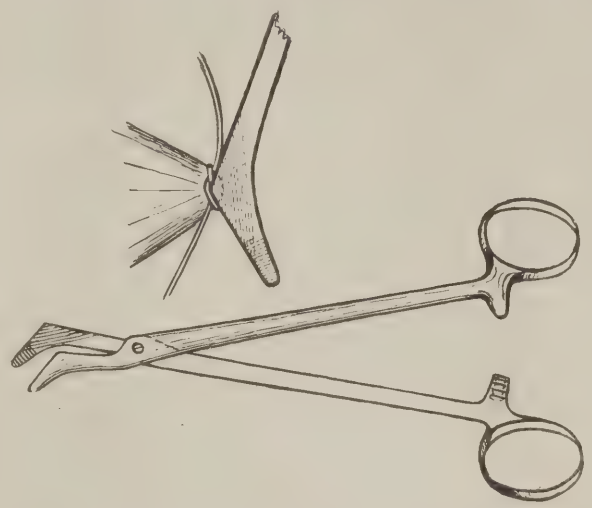
Bleeding vessels in deep narrow cavities are usually tied off by first grasping them in the artery clamps. Ligatures are then slipped down over each clamp, passed over its tip, looped around the vessel and tied. The whole procedure is quite easy, except the passing of the ligature over the tip of the clamp. The nose of the instrument is embedded in the tissues and it is often troublesome to raise it sufficiently out of the bed of tissue to pass the ligature over and around so that it can be tied in place. The instrument devised is presented herewith, showing the clamp partially open. The artery is grasped by the forceps from the point a, instead of at the nose of the instrument. It is then quite easy to slip the ligature down and over the apex of the clamp, when the vessel is promptly tied.



48 East Forty-Ninth Street.

Poikilocytes in Otherwise Normal Blood.—John G. Huck and Rena M. Bigalow (*Bulletin of the Johns Hopkins Hospital,* November, 1923) report the case of a patient who was observed for two years, fresh preparations of whose blood showed that between fifty-three and eighty-four per cent. of the erythrocytes had an elliptical or elongated form; hanging drop preparation showed from fifty-nine to seventy per cent., and stained smear from twelve to forty per cent. The blood of nine members of the patient's family was examined, and only that of the patient's mother showed anything unusual. Her blood presented the same anomaly, from fifty to eighty per cent. of the erythrocytes in fresh preparation were of an elliptical or elongated form. The patient had been used several times as a donor, without untoward effects on the recipients. Only five cases of this condition have been observed, occurring in the white as well as black races. From the authors' studies of this case they conclude that this particular or special poikilocytosis is an inherent property of the red blood cells or an anomaly of the bone marrow, and that the patient's serum is without effect on normal erythrocytes.

Historical Medicine

Notes on Acute Rheumatism by Dr. Thomas Watson, 1824-1843*

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The American edition of Dr. Thomas Watson's *Lectures on The Principles and Practice of Physic* first appeared in 1845 under the editorship of D. Francis Condie, M. D., secretary of the College of Physicians. It was published by Lea and Blanchard of Philadelphia. In the preface by the editor we read: "If by the few notes he has been induced to append to the present edition, the Editor has succeeded in adding in some slight degree to their value he will be amply repaid for his labour."

One of these notes is as follows: "Without pretending to advocate the employment of blood letting in every case of cyanotic tonsillaris and of acute rheumatism, we must dissent from the correctness of Dr. Watson's position that even though the fever be high and the pulse hard, it may not be worth while to bleed for the sake of subduing inflammation which in these affections is attended with so little danger. When acute rheumatism occurs in young, robust, and phlethoric habits and is attended with considerable fever, and a hard and accelerated pulse, we know of no remedy from which such decided advantage is to be obtained as from a well timed resort to the lancet." This note of Condie's follows this sentence of Watson: "The subsequent debilitating effect of the loss of blood upon the system may be more certain and more hurtful than the effect of the bleeding upon the local inflammation is likely to be beneficial."

These statements were made at the time when knowledge of diseases of the heart was in its infancy. For Dr. Watson tells us: "I can remember indeed the time when disease of the heart was thought to be a very rare thing; but it is now well known to be one of the commonest of disorders, and it connects itself with a variety of other affections with which it was formerly supposed to have no connection."

Watson's knowledge, even in those early days of heart work, was wonderfully sound for he states in his book: "That the chance of the joint affection being complicated with rheumatic conditions is the greater in proportion as the patient is the younger." Another dictum of his that strikes us with modern freshness is to the effect that the inflammation of the lining membrane does not always compromise the life of the patient for: "They are fatal at length in ninety-nine cases out of a hundred through the alterations to which they lead in the muscle wherewith they are connected." One reason, he tells us, why the disease of the heart used formerly to be overlooked was that its natural dimensions were not attended to because "it is not easy to form any very precise estimate of the size of a healthy heart."

In later times Goodhart has emphasized the difficulty of estimating hypertrophy or dilatation and we all know how difficult it is to differentiate between dilatation and pericarditis, although x rays have been a very great assistance. Even with x rays we want a definite point in relation to the trunk to which we can correlate the heart and the one that commends itself to me is the point half way between the right abdominal process and the left anterior superior iliac spine.

Watson tells us with regard to the sounds of the heart that there had been much recent discussion as to the physical causes of these sounds. He confesses his inability to measure satisfactorily the duration of the two sounds, but as to their causes he is very dogmatic. He tells us that the second or diastolic sound used to be ascribed to the contraction of the auricles, but that was quite a mistake. In a recent number of the *Lancet,* however, Dr. Pinchin and Gloyne state: "At the apex of the heart the auricular beat . . . could be heard as a loud regular beat (sic)." "In truth," says Watson, "the auricular contractions are very feeble, and not attended with any appreciable noise." "I have," he adds, "no doubt, that the second sound is produced mainly, if not altogether, by the sudden shutting off of the flood gates placed at the mouths of the two great outlets of the heart."

As to the first sound, he is of the opinion that the abrupt closure of the mitral valves has something to do with it, "but chiefly, however, it consists of the sound that results from the muscular contraction of the ventricles." And he proceeds to say: "You are aware that the vigorous contraction of a large muscle is accompanied by audible sounds."

The teachings of this great pioneer of heart work have unfortunately developed into tradition and until recently this statement has not been challenged, but as Professor Halliburton mentions in his classic work on physiology, "A muscle when it contracts produces no sound." Old Dr. Maynwaringe, to whom I referred in my article on Notes on Phthisis which appeared in the January 2nd issue of JOURNAL writes in 1675 as follows: "It will not be lost time then but profitable to cast our eyes upon the practice of such writers as are accounted men of note, leaders in the profession, and see how they consent in this point and their reasons for what they do, because the age is much governed by tradition and example and think they are safe practisers, if they keep to the beaten road and if they have the authority of the predecessors to back them, and this is one main block that puts a stop to the proficiency and progress of this science, else it would have arrived to a greater perfection and certainty than as now it stands." How little do men alter during the course of the centuries!

As mentioned above, Watson emphasizes the sound associated with the contraction of the large

*From the American edition of Watson's lectures, 1845.

muscle, but what about the tiny muscular system which constitutes the fetal heart? To imagine this little organ producing a sound sufficiently loud to travel through the thick uterine walls as well as those of the abdomen is putting a strain on credulity. Fluid, on the other hand, can be demonstrated to produce a sound, for if a small quantity, say four c.c. of water be placed in a large rubber fingerstall, with its proximal end tied, and then rhythmically compressed with the forefinger, typical "heart sounds" will be conveyed to the ear by a stethoscope placed at the other end. "The short abrupt knock of chlorotic palpitations," Watson says, "is often attended with a bellows sound. The weak and flabby muscle dilates (I fancy) and the natural proportion between the chamber and its outlet is for a time destroyed." One can only add, *"mirabile dictu."*

Watson devotes much space to the head symptoms or "nervous disturbance which is so apt to occur in acute rheumatism," although these days we see very little of such disturbances. Osler speaks of four cases only out of three hundred sixty-five in which the patients had delirium and three of these he thought were due to, or aggravated by, the salicylates. In Watson's days those head cases were spoken of as metastasis to the brain. But he emphasizes the fact that in those the delirium had been extreme, no traces of disease have been discoverable within the skull. After quoting an interesting case in which the patient had become maniacal before death, he states that: "If no examination of the body had been made, the case might have been quoted as a well marked example of metastasis to the brain." It was so considered before the brain was inspected. The case occurred in 1824 and then follows this interesting paragraph. "Here had been symptoms which indicated the cardiac disease but at that time I did not know how frequently carditis was combined with acute rheumatism. Auscultation had not yet come much into fashion in this country; at any rate, I knew little or nothing of its use and I had supposed that the chest symptoms resulted from rheumatism of the intercostal muscles."

One hundred years ago auscultation was in its infancy and as Watson tells us had not come into fashion! Fashion in medicine! The mention of the word strikes oddly on our ears. Yet Maynwaringe, two hundred and fifty years ago, refers to, and soundly condemns, the same thing. Fashion in science fortunately does not seem to have arrived, though even here we meet with cults; orthodoxy is the great word today in medicine, and woe to him who thinks on independent lines, if by any chance such thinking disturbs the traditions of the fathers. It pays to be fashionable because *populus dult decipi.*

Watson points out that rheumatic carditis is sometimes the first step in the whole disease, the cardiac symptoms sometimes preceding those of the joint even by two or three days. This is a point to be emphasized, for the joint symptoms seem to be much less pronounced than they were thirty or forty years ago. Is it because people are better shod and better clad today, with the result that the joints are better protected and consequently less devitalized? Cold is the determining factor in the locating of extensive diapedesis known as chilblains, in those so predisposed, and it seems to me that with warmer clothing, the joints are not subjected in rheumatic fever to this accentuated diapedesis.

Watson's statement: "I know of no other exciting cause of acute rheumatism than exposure to cold, especially combined with moisture," is one that seems to have carried weight up to the present day. But while it may, as I have said, be the deciding factor as to which joint may be attacked, it can hardly be deemed sufficient to account for those cases where the carditis is the first evidence of the disease.

With regard to treatment, we may learn much from his failures. He tells us: "I once thought that if we caught the inflammation at its very commencement, we might calculate upon a perfect cure by first bleeding the patient freely, and secondly, by putting him under the specific influence of mercury." "We may easily deceive ourselves, for in a large number of cases, whether treated well, ill, or not at all, the patients seem to recover." "I am sorry to be obliged to say that the more I see of this formidable malady, the more reason I find for fearing that it is seldom within the possibility of repair."

How very true this statement of Watson's is today! How many patients are dosed beyond measure but without any good results especially as regard the heart. "Now," says Watson, "you may be sure when men's opinions concerning treatment of a disease, which is of common occurrence and easy recognition, are thus unsettled and diverse, you may be sure that no specific for that disease has yet been discovered; and secondly, that the disease is not very obedient to any remediable plan!"

Is it the disease or the patient's constitution that is disobedient? Is it not the tendency today to treat the constitution by stimulating its antibodies to rise in response to the injection of an autogenetic vaccine? We have reached the stage of recognizing the microorganism or the toxin. We just want a sure means of estimating the constitutional capacity in order to get the right response to a well ordered or well directed protein catalyst, injected so as to restore a disturbed time reaction to its normal periodicity. By this I mean that the important interchange between the leucocytes and the endothelial cells takes place within very definite limits as to time and that any disturbance of this time reaction results in disease. The exact location for the starting of this disturbance of the time reaction, as, for instance, in the vessels of the valves and myocardium, determines what we call carditis or acute rheumatism, while that which originates in the lungs gives rise to the exudation in which the ever present tubercle bacilli find a most desirable forcing soil.

But of bacilli, toxins and antitoxins, Watson knew nothing, yet his treatment of carditis was nearly as good as ours today, for we like him "are occasionally baffled and the patient continues to suffer notwithstanding the diligent enforcement of all the approved remedies and plans of treatment."

Watson was an optimist; his hope of success was based on his faith in medicine. "I am far, however," he tells us, "from thinking that remedies are useless and I do by no means assent to the dictum of Dr. Warren who, when asked what was good for acute rheumatism, answered six weeks."

A Psychohistorical Study of the Sex Balance in Greek Art*

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(*Concluded from page 208*)

In later life such an individual completes his psychosexual union in love relationship, not with the opposite sex, but with someone who is more like himself and who better personifies himself; that is, his object love is unconsciously homosexual. If this unconscious trend is not sublimated or directed into acceptable social and personal channels he then becomes a potential candidate for a neurosis, as the state remains repressed or latent. We may finally summarize in saying that this tendency to a sex imbalance in ancient times, even as it is today, rests upon the psychobiological fact of the too prolonged and intensive primary identification of the child with the mother and the consequent imbalance of the psychosexual development of the child in later life incident thereto.

Although in many instances the homosexual neuroses as such are dispelled by psychoanalysis, the homosexual tendencies still remain; so that it may be questioned whether the psychobiological causes which induce homosexuality are really dynamic, whether the mother identification and its attendant autoerotism, or the later transformation of the identification into narcissism, is the real determiner of the overt sex inversion or its repression and later neurosis. Undoubtedly numerous cases which have now been successfully analyzed prove that this psychobiological process in the main is the correct one so far as a process may explain it, but is it really dynamic and fully causative for the state? If so, why doesn't inversion more frequently occur and when the analysis is quite complete why doesn't the inverted tendency fully disappear? Those who perhaps have taken a more static view of the inverted sex state may now put forward once more a purely biological explanation. In general terms the biologists maintain that the transmission of bisexual characters stand in the relationship somewhat as dominant and recessive characters in the Mendelian law of interitance so that the preponderance is in favor of the final sex to which the child is to belong. They argue that in some as yet unknown manner the mental character traits of the opposite sex in the child are the reasons why the mother identification is so strong and enduring, and that this biological inheritance is the real dynamic agent which sets in motion all that we have set forth psychobiologically as *the* reason for sex inversion. In short, biologists maintain that their principle is *the* dynamic one while the psychoanalytic formula but illustrates the manner *by which* this mechanism works. They point out further that the potential of the pattern engraved upon the somatic gametes predetermine the type of environmental appeal and stimuli to which the organism will give heed. They urge still further that all that psychoanalytic treatment may accomplish is to redirect the social values and conserve the individual from the neurosis of defective adaptation consequent to his inverted sexual character; that the real and underlying biological evidence of inversion *per se* remains quite unchanged throughout the life of such an individual.

While psychoanalysis may pride itself upon a practical cure of inestimable worth in a homosexual neurosis, there still remain other problems to conquer which as yet lie outside an immediate psychoanalytic therapy. I may refer incidentally to the social significance of the whole sex imbalance mechanism as seen in everyday life independent of homosexuality *per se* or its neuroses, and which lie at the foundation of the ordinary types of marital unhappiness. Here even abnormal psychology throws a flood of light where other methods of investigation leave the subject in obscure mystery. For instance, in marital infelicity what is more common than to find that the egoistic attitude, the fiction ideal or personal ambition of one mate is in jarring discord with that of the other? This type of marital difficulty is most frequently stated in legal phraseology as "incompatibility of temperament." Many other factors aside from the egoistic ones are, of course, at fault, but we submit that by and large the fundamental one is in the defect of ego adaptation; not, perhaps, in its crassest form of simple egotistical selfishness—as loose a scientific phrase as this may be—but in the more subtle continuance of the inadaptive narcissism of the contracting parties in the marital union. As yet these slighter but more subtle forms of defects of egoistic adaptation have hardly been touched upon in scientific analysis. The field as yet remains almost entirely in the hands of the dramatist, the novelist, and the poet.

It is even our obvious duty as physicians to subject these more subtle patterns of social and economic defects to analysis as well as to the specific medical pathology which until now we have mainly directed our efforts. As an earnest of meeting this need perhaps one might not do better than to analyze in a general manner a historical epoch itself and lay in parallel columns, as it were, the social traits of the life of that period with those depicted in its art ideals. The art representation may be said to mirror the varying transformation of the collective life of the people as a whole. If such an analysis should be in direct accord with what we know of that social and economic period, its origin, rise and decadence, we may infer that the analysis of the life of that period is true. Furthermore, if it is proved that the dynamism of the love life of a people as thus portrayed is a true explanation or foreshadowing of its changing culture, such a study will be of inestimable value in understanding the rise and fall of cultures and therefore be of greatest biological significance to all civilized peoples.

*Presented before Historical Section, New York Academy of Medicine, November 30, 1923.

GENERAL REMARKS.

For general purposes it does not matter whether one takes the stand that homosexuality is the main cause of the peculiar sex balance in Greek art, but for scientific study it is important to know how this blending of the sex characters in one and the same subject has arisen. It is highly essential to recognize that this art tendency is but the unconscious projection of the sex ideals of the time. There can be no real doubt that the tendency of this ideal was first a fine restraint of homosexuality, the undue subordination of the opposite sex characteristics to that of the main character of the dominant. Such a restraint is altogether praiseworthy and had much to do, no doubt, with the all roundness of developmental life of the period. Indeed, it lies at the very heart of all proper development in any and all periods. It is only in recent times, indeed in our very own day, that this factor in complete development has been made clearer by psychoanalytic investigation. Heretofore the matter rested upon the somewhat static formulation that the unequal dominance of one type of characters was due to the uncertain and anomalous taking over of certain elements of the one type of parent at the expense of the other and that the series of life experiencs which the individual child underwent played little or no rôle in the after life. We now see, though this biological explanation may be the predisposing and therefore controlling determinant of the manner in which the individual child shall make his adaptations, the psychobiological principles of mother identification give us a more flexible explanation of how this sex anomaly comes about. The why of it is as inexplicable whether one takes the biological or the psychological formulation. The union of the two dynamic factors, as has been already urged, is perhaps the wiser view to take at present. Not to do so lands one sooner or later into the quagmire of all sorts of sophistications and rationalizations. Psychologists need to know more biology, and *vice versa*.

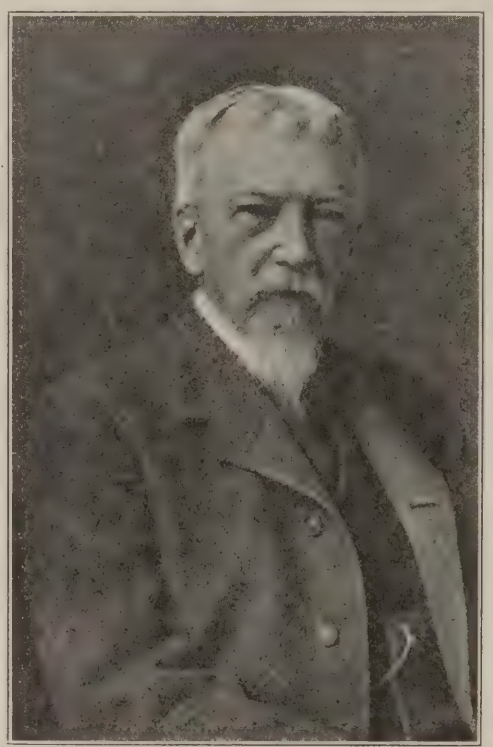
Turning to the more immediate issues in the study, why should the boy object of love in Greek life and art have been inferior? Can love only occur between unequals? These are quite as germane questions in heterosexual as in homosexual love. One may justly question whether the inferiority is real or fictitious. We know that love in its essence consists in an identification with the loved object. It is, as Burrow aptly expresses it, seeing oneself in another, the recognition in another of that which one would himself be. To love, then, is more than an appreciation but is to find in an individual an unconsciously cherished image of oneself, to realize one's ideal. Love, therefore, is an unconscious process. The seeming inferiority which the onlooker may feel in all love than for the *lover* really does not exist. Just in proportion as this primary identification with the mother endures, the individual child remains infantile because it is, itself, born of that period and state. It also remains largely affective because it is closely bound up with the intuitive feeling of the feminine nature. Likewise to the extent of the two foregoing propositions, the child in development remains introverted in tendency.

We have long known that in man's ancient past in his primitive state that though a deep and unconscious transference of his soul energy to the realities about him (which we call the object in contrast to man's subjective individual self), there is something of the awful and terrible infused in the several objects of his environment. In the Greek period this was called the fabled Dionysian attitude expressed in unbridled frenzy, fury or freedom of attitude and behavior; these mythological forces we now know are emanations from the deeper unconscious forces of life. In contrast to this we had a more superficial mental attribute, the creative power of art, music and painting, in short art which was born by an inner contemplation of the idealism of one's own soul. This more adaptable mechanism of directed effort of man was supposed to be presided over by Apollo, the soul of the art functions. The aesthetic function of art was thus the energy of the deeper and archaic power flowing up through the conscious repressive screen and appearing in a state acceptable to consciousness as creative art. It has all the magic beauty of the soul's idealism but the awfulness of the Dionysian orgies was repressed. Thus we had in the Greeks a projected art drawn from the soul's highest and loftiest idealism. It literally charmed man's mind from the awfulness of the writhing fury his deeper nature might otherwise have enmeshed him. It was usually in a state of nakedness. It portrayed a state of introspection, of inner contemplation toward the dream or phantasy world of eternal ideas. It was essentially an aesthetic attitude of portrayal but one of the many essential attributes of the real human soul. It did not rest essentially upon the whole life of a people before and after death, hence it was not as fundamentally great in concept as that of the less graceful and intrinsically less form of beauty of the Egyptians that preceded it. A part of the poise and serenity of Greek art is due to this very aesthetic contemplation which is so largely drawn from an idealism that is so static and oftentimes essentially aloof from reality, even being beautiful at the expense of being unreal. It is easy to see also that in this portrayal of an inner idealism that the bisexual phase would naturally have representation. May not this be explained by the fact that a certain high degree of oneness and unity exists; where the two sex natures coequally exist in the one individual to such a high degree, and just in proportion as the two sex characteristics have the opportunity to function colligatively, that individual will be sufficient to himself. While this explanation has its limitations, one may easily find many examples wherein certain natures have such a wide reach of satisfaction within the range of their own life interests and work that the need of an outside supplement may be negligible. Finally, the Greeks being able to hold in leash, to repress the homosexual tendency, or rather to sublimate it in manly or normal human service, was the great lesson taught us in their early life ideals. As the civic and social fabric deteriorated, even as in the less heroic days of our own time, this restraint and sublimination failed, and debauchery and vice changed places with strength, vigor, and sobriety of living.

Contributors to the Science of Medicine

S. WEIR MITCHELL, M.D., LL.D., F.R.S

Silas Weir Mitchell was born in Philadelphia in 1829. His father, John K. Mitchell, also a physician of note, was a member of a Scotch family that had come to Virginia to settle. His grandfather was the Mitchell who gave Robert Burns, the poet, the position by means of which he made a living. An autobiographical note of Weir Mitchell's states that his father once said to him: "You are wanting in nearly all the qualities that go to make success in medicine. You have brains enough, but no industry." Mitchell himself added, "He was correct. I developed late." Another note reads: "Surgery, which was my father's desire for me, was horrible to me. I fainted so often at operations that I began to despair—but by assisting at the surgical clinics I overcame by degrees my horror of blood and pain." In spite of such experiences, Mitchell persevered, studied medicine at Jefferson College, from which he was graduated in 1850, afterwards doing work in analytical chemistry in a drug store. He later went to Paris, where he continued his medical and surgical courses.



S. Weir Mitchell

For ten years after his return from abroad, Mitchell devoted himself to a not too urgent general practice, which gave him time for experimental investigations in physiology, pharmacology, and toxicology. He was the first notable example in the United States of medical success based upon what we now call laboratory work—there were no medical laboratories in America then. Before 1863 he had published a number of papers and reports on various phases of the subjects mentioned above, the most valuable of these probably having been the monograph on rattlesnake venom, issued in 1860 as one of the Smithsonian *Contributions*. After 1863, his most important researches were along neurophysiological lines, his most notable contributions being those on the cerebellum. For that year was the turning point in his career toward neurology. Mitchell and George R. Morehouse were at this time placed in charge of a military hospital for nervous diseases. From this time on, the former, sometimes collaborating with his assistant, young William W. Keen, issued a series of brilliant papers on such subjects as reflex paralysis, gunshot wounds and other injuries of the nerves, malingering, antagonism of morphine and atropine and other subjects. In 1872 these and other papers were gathered and published in a volume entitled *Injuries of Nerves and Their Consequences*. A valuable addition was later made to this by his son, Dr. John K. Mitchell, in the form of a supplementary volume giving subsequent histories of surviving patients and additional case material. Dr. William H. Welch writes that "the study and description of peripheral nerve phenomena, especially those resulting from injury, constitute the largest, most original, distinctive, and important contribution of Weir Mitchell to neurology, and in this narrower field his work is comparable to that of Duchenne and Charcot upon diseases of the spinal cord."

After the war Mitchell rapidly gained and held the position of leading neurologist in this country and one of the most notable in the world. His chief institutional work was done at the Orthopedic Hospital, where he was instrumental in establishing in 1870 the Infirmary for Nervous Diseases. Here he taught, worked, and surrounded himself with a school of the ablest investigators and clinicians. Among his discoveries and original observations were postparalytic chorea, erythromelalgia, reflex disorders due to eyestrain, the unilateral hard edema of hysterical hemiplegia, and the relation of pain to weather. Other contributions are on the early history of instrumental precision in medicine, recollections of the Civil War, his papers on Harvey, whom he admired above all men, his personal memoirs, and his delightful popular talks. His many stories and novels give evidence of his large and sympathetic experience of life as a physician, and some of them deal with or introduce distinctly medical subject matter, as, for instance, *Doctor North and His Friends*, the *Autobiography of a Quack*, the *Case of George Dedlow*—the story of man who lost all four limbs—*Hygh Wynne*, and *Circumstance*, both describing senile change; *Roland Blake*, involving hysteria; *Far in the Forest*, a story of paranoia; *In War Time* and *Constance Trescott*, both describing moral deterioration of character. "But he emerges from his own hard early struggle and his long experience of human excrescences," writes Owen Wister, relative and friend, "writing the literature of encourage-

ment, not discouragement. No matter through what dark alleys his muse passed, she comes to us always with her skirts clean and her heart warm. She wishes us well, not ill; she gives no sneer at the evil world, she is sorry for it; her gospel is not of hate but of love. The tone of Mitchell's books is a lesson and a tonic for an age that is sick and weak with literary perverts."

Mitchell was also a writer of poetry of unusual merit and in some cases of rare beauty. All his writings, both literary and medical, possess a noteworthy charm and forcefulness of style. His scientific and literary ability persisted to the very end of his long life; it is interesting to note that his last novel, *Westways,* was written at the age of eighty-five. One of his distinctive characteristics was always to give very pointedly descriptive titles to his productions, even those of a scientific nature. He did not call an important article "Interesting Cases" to the despair of the researcher worker, but *Backward Pronunciation of Words,* or *Lip Whispering of the Insane.*

Weir Mitchell held many positions of prominence during his long and active life, and was the recipient of many notable honors, both in his native land and abroad. He was a member of the Academy of Natural Sciences, a Fellow of the College of Physicians of Philadelphia, a foreign associate of the French Academy of Medicine, of the Royal Society, and of other foreign bodies. He held an honorary degree of M.D. from the University of Bologna and an LL.D. from Edinburgh.

Probably his greatest fame with the public, however, and with many of his own profession, rests upon the fact that he originated and practiced the method of treatment that bears his name. This is too well known to need comment here.

No more beautiful tribute has ever been given to Weir Mitchell than that in the address of Dr. Welch at the special memorial meeting of the College of Physicians of Philadelphia held soon after the great neurologist's death on January 6th, 1914. Welch said: "He was a great physician; our leader, endeared and admired; our friend and counselor, generous, wise, inspiring; a man of singular graces and accomplishments, active in advancing knowledge and in good works; a poet and a man of letters; a sweetener of life to both sick and well. As he said of Harvey, we may say of him—Weir Mitchell represented all that is best in the physician and the gentleman."

Hookworm Disease.—If the references contained in the Ebers papyrus really refer to hookworm disease, they would make the knowledge of the disease very ancient. . . . Dubini, in 1838, first described the worm and gave the name from the bent or curved appearance of the mouth. In the latter part of the nineteenth century, the anemia of brickworkers in Italy was shown to be due to a parasite, but it was not until the investigations of Stiles in 1901 and later that it was shown that the hookworm was widely prevalent and responsible for a vast amount of ill health and anemia.—*Proceedings, Medical Association of the Isthmian Canal Zone.*

Louis Daniel Beauperthuy.—Casey A. Wood M.D., *(Annals of Medical History,* June, 1922) gives an account of the life and work of this original investigator and authority on epidemic and endemic diseases and leprosy. Beauperthuy was born in 1803 in Guadaloupe, and took his M.D. degree at Paris in 1837. After graduation he returned to Guadaloupe to practise and especially to study tropical diseases. Quotations from his writings are given, describing some of his discoveries and opinions. The absence of mosquitoes during cold weather, he states, explains the disappearance of malaria. It is not the decomposition of water that makes it dangerous to health and life, but the presence of these insects. During the dry season fevers of all sorts diminish or disappear, but they revive during the rainy seasons, when mosquitoes are numerous, and the diseases they produce are then most malignant. Beauperthuy goes on to say that the mosquito is responsible also for yellow fever and various other diseases. He states his case emphatically and just as definitely denies the truth of the older medical theories, although it remained for others to establish the exact nature and origin of the virus. He asserts many times that mosquitoes and other insects alone are the causes of such fevers by inoculating their victims with poisons.

Beauperthuy is mistaken, however, as to the nature of the morbidic agent, which we now know is a live organism transferred by the insects from man to man, and not, as he conceived it, an extraneous substance ,such as ptomaines of putrid fish. Boyce recognized in Beauperthuy "a medical man with a strong biological trend," and calls him "the father of the doctrine of insect borne disease."

He was also an ardent investigator of the cause and nature of leprosy, which he thought might too be propagated by insects. His socalled cure of the disease was practised in North America, Europe and India, and his services were in wide demand in the West Indies and South America. He did not profess to cure nor did he wish to treat advanced cases of leprosy, but only those in their incipiency. His system of treatment included residence in as salubrious a locality as possible; a diet, nutritious but not over stimulating, consisting of a daily portion of fresh meat, but no pork nor salt fish; red wine in moderation if the patient had been accustomed to it; and, in addition, attention to the other rules of personal hygiene.

For internal treatment he gave mercuric bichloride in small doses. Certain liniments were used to relieve and cure the eczematous and other eruptions. For active destruction of the tubercles, he employed either a strong solution of silver and copper nitrate, or, perferably, the oil of the cashew nut. Subsequent observers, the writer states, while reporting amelioration of the symptoms in some cases, reported against the treatment as a whole. No cases of permanent cure were reported, but in its day the Beauperthuy method was employed in many countries of the globe.

Beauperthuy died quite suddenly in 1871 of apoplexy at the leper establishment on Kaow Island, where he was engaged in developing his system, his services having been sought by the government of British Guiana.

Editorial Articles

DISINFECTION OF THE URINARY TRACT

There is considerable difference of opinion regarding the effectiveness of disinfectants administered internally, particularly intestinal disinfectants. So far as urinary disinfectants are concerned, there seems to be general agreement that given favorable conditions and in certain circumstances urine may be disinfected in a very satisfactory manner. For example, it is admitted that hexamine will give good results in this direction when conditions are such as to give full play to its disinfecting properties. Many authorities have stated conclusively that it is an invaluable urinary antiseptic. Being excreted by the kidney, it is split up in the acid urine, free formaldehyde being liberated, which destroys the germs in the secretion. But in order that the drug shall exert its disinfecting action, the urine must be acid.

In a recent number of *Deutsche medizinische Wochenschrift* is an article by G. Daniel on the treatment of pyelitis by hexamine which is better known by the name of urotropin. It is pointed out that apart from secondary infections of the renal pelvis, most cases of pyelitis are due to infection with the colon bacillus. The growth of this bacillus is checked by urotropin in acid urine, and activity of growth of the colon bacillus is inversely proportional to the concentration of the urine. On the basis of these observations, a system has been adopted, the chief features of which are the reduction of fluids and the administration of an acid forming diet, with phosphoric acid, urotropin, salicylic preparations and, further to concentrate the urine, diaphoretic treatment. Under this form of treatment the patient excretes concentrated acid urine, and the quantity being reduced, micturition becomes less frequent. Moreover, the urine being retained in the bladder for a considerable time the opportunities for its disinfecting the structures with which it comes into contact are increased. According to the writer, the results of this mode of treatment have been excellent, fever, pain, pyuria, and frequency of micturition disappearing, and the urine becoming sterile. The writer states that since 1917 he has practised a modified form of this treatment at the University Hospital in Budapest with definitely good success in almost all cases. The details of his methods of treatment and the results are given in his article.

It may be pointed out that in many chronic diseases, the socalled rheumatic group for instance, it is essential for success that free diuresis be induced and that the urine be disinfected and detoxicated as far as is possible. The belief is current, and appears to be gaining greater currency, that most of the chronic diseases are of toxic origin. These toxins, according to the views of some authorities, are generated in the intestines by reason of long continued intestinal stasis and in course of time pervade and permeate the whole system, and in this poisoning, of course, the urinary tract is involved.

While the effects of prolonged constipation and chronic intestinal stasis may be exaggerated it is reasonable to believe that in this manner toxins may invade the system to such an extent that diseases and conditions of ill health may ensue. In any event, it is always indicated to maintain the functions of excretion and elimination in good working order and to combat pyelitis, cystitis and other symptoms showing that the machinery of the body is out of gear by disinfecting the urinary tract by the most effective means at our disposal.

THE INTOXICATION OF SPECIALIZATION

Specialization has its purposes. When the general practitioner has reached an *impasse* he is glad to refer his case to the specialist. And this tendency to specialize is so acute, especially in the large centres of civilization, that we hear rash statements to the effect that the general practitioner is obsolescent. Not so! In every community from Key West to Nome he still bears aloft the standard of humanity and healing. And that wit who said that So and So specialized in the "skin and its contents" unconsciously described many a local Paracelsus. By the sheer exigency of circumstance thousands of physicians spend a long and useful life curing malaria, pulling teeth, taking out appendices, intubating, vaccinating, and, it may be added, advising, encouraging and shriving whole communities.

But with it all, the specialist has his place, and a necessary one. The demand for him is, of course, greatest in the large cities, and the physicians graduating there naturally look forward to specializing later in their career. The young doctor, we will say, has a penchant for neurology. He makes the highest mark in the medical school examination; he reads Jelliffe and White, and Freud and Jung and Adler, and Hunt and Bing, and Church and Pedersen, and so on. He finds a few cases of psychoneurosis in his practice, and is able to relieve them by psychotherapeutic means. He joins the local neurological society; and, finally, when he has in the natural

course of events attained to that appearance of approaching senility which alone will convince the average layman of a right to specialize, he abandons his general practice, except of course those old patients and family friends who still believe in him and will have no one else—as long as he continues to treat them at reduced rates.

Now this is all very well, and quite natural and proper. But there is a danger. Just as the tailor sees everywhere fits and misfits and the literary censor pornography in every printed page, so does the specialist see his specialty. He becomes intoxicated with it. And in so doing he is bound to suffer occasionally from the scotoma inseparable from any form of intoxication. He misses clinical signs which are obvious to the general practitioner, and he lays undue stress upon those which point to his own specialty.

The remedy is twofold. One strand lies in the hands of the general practitioner who should only refer a case to a specialist—short, of course, of some urgency where delay might prove serious—when he is sure the patient has some disorder within that specialist's province. And the second string belongs to the specialist himself. Having obtained an all round medical education in the medical school itself, he should determine to lay a broad general foundation in actual practice before attempting a specialty. The ideal way would be to spend at least five years at it, and every physician, for the good of his soul, should practise for one year in a rural community.

Then he is perhaps ready to specialize, for in his system are circulating those antitoxins of general medical knowledge and experience of the organism as a whole, which are the best protection against the intoxication of specialization.

THE QUESTION OF BIRTH CONTROL

Opinions expressed with regard to birth control differ widely. In civilized countries and among the well to do it is practised frequently. Some medical men are noncommittal on the subject. In Great Britain a section of the profession, including several well known men, have declared themselves in favor of contraception generally with certain reservations. Some of these gave their views in the *Practitioner* of last June. Recently, Dr. Mary Scharlieb, one of the best known and most experienced of the British female practitioners, stated in public her ideas on the subject. She pointed out that this was essentially a material age and that birth control was largely an affair of selfishness on the part of both wife and husband. Dr. Scharlieb scouted the excuse brought forward by some people for not having a family, that they were afraid of transmitting hereditary or transmissible disease. This view is largely a bogey. Inherited diseases were few, and the chief of them would not exist were it not for hopeless materialism and selfishness. Artificial control is useless and by engendering false confidence frequently leads to the transmission of the very diseases that its advocates plead it is calculated to avoid. There are a certain number of young married folk who think it smart not to have a family at once. But people who put off the responsibility might find that they could not undertake it when they were willing. As for the purely medical aspect of the subject, she had been in practice for forty-five years and she knew that women who shirked their duties as mothers suffered often from nerves and lost a great deal of the joy and spring of life.

There were methods frequently practised which were specially harmful to the nervous system of the husband, others which fell with greater severity on the wife, and yet others that were injurious to both. Moreover, she knew that it was practically impossible for most of these arrangements to be effected decently and comfortably and that often they were not effective. As a doctor, therefore, she condemned all artificial control of conception as being injurious certainly to the nervous system, sometimes locally undesirable, and occasionally leading to serious illness, or even to death. Also as a doctor she knew that the increasing propaganda with regard to artificial methods of control was exceedingly bad for the unmarried of both sexes. A large number of people who meant well required the support of public opinion in order to enable them to do well, and the advocacy of nauseous practices was a great injustice to weaker brothers and sisters. This is the most severe indictment of birth control which has been made publicly by an authority and is deserving of earnest consideration. Doubtless there are economic reasons why limitation of births is highly desirable. Overpopulation is one reason and in spite of the assertion that there is plenty of room in other countries for the surplus, the fact is that the authorities in other countries will not take many of the surplus population who are willing to go and which their own country is only too willing to get rid of.

Large families, as a rule, are most frequent among those who are least able to care for their children and bring them up properly. On the other hand, birth control is most common among those who are able to rear their children in a healthy environment and educate them to become useful members of society. It is obvious that a great many women have too many children, and it is women who have to work hard and who have little time to spare for the care of their children who have usually the big-

gest families. It would appear then that in some instances birth control is justified, as it cannot be in the best interests of the race, nation or individual that children should be brought into the world whose parents cannot house, feed, educate or care for them in any way properly. Such children are apt to become a burden and a menace to the community than a help.

The strongest argument, however, that Dr. Scharlieb brings against birth control is that all methods of artificial contraception are injurious in themselves and often ineffective. There is a great deal to be learned concerning birth control before it is unduly praised or wholly condemned. One point about it seems certain, that if it is done for material and selfish reasons it is to be condemned, and another point is that if it is a means of limiting the output of the fit while no limitation is placed on the propagation of the unfit or relatively unfit or of those whose parents cannot bring their offspring up properly, it is to be condemned.

THE TREND OF MEDICINE IN GREAT BRITAIN.

In Great Britain a crisis in the fortunes of medicine appears to be approaching and with some celerity. The passing of the Insurance Act, with the institution of what is generally known as panel practice, introduced drastic changes into English medical practice and was the thin end of the wedge towards the introduction of further and more sweeping reforms. The establishment of a Ministry of Health was the next move in the direction of more changes and the latest report of Sir George Newman, chief medical advisor to the Ministry of Health entitled Recent Advances of Medical Education in England is, to some extent, an exposition of the medical situation and predictions as to the future from the point of view of the State.

Sir George Newman, in addition to being an authority on public health and hygiene, is a facile writer of great distinction. His literary gifts equal his knowledge of health and medical affairs and his capacity for organization. He expresses himself logically and lucidly and with broad statesmanlike views. His phrasing is so picturesque that he makes of what in some hands would be a dry as dust document, a real romance of medicine. He lays stress on the fact that the purpose of the new medical curriculum, which has just been revised and approved by the General Medical Council, will bring forth practical results. Of course it has been obvious for some little time that the trend of medicine is towards prevention and this trend necessitates changes in the medical curriculum.

Sir Clifford Allbutt said in 1919 that medicine had come to a new birth, and Sir James Mackenzie has been preaching both by theory and practice that preventive treatment does not consist only in preventing disease by public health measures, hygiene, domestic and otherwise, and so on, but by treating the early symptoms of disease in such a way that it is prevented from developing. But in order that this same method of prevention may be possible the public must be educated to consult a medical man when early symptoms appear, and the doctor must be taught to diagnose and treat successfully early symptoms and even when disease has developed, to diagnose the original cause and not the surface symptoms, and treat accordingly.

With the education of the public the report does not deal. It is, however, pointed out that the medical student must learn how disease begins and why, and what the first symptoms are. If he is not thus educated he will not be fully equipped for the modern practice of medicine, whether he is to be a private practitioner or a public health doctor, as the community both as taxpayers and patients are intimately interested in his efficiency and in his thorough training for his somewhat new rôle.

Sir George Newman insists that, while the new medical curriculum and the public health rules "give added emphasis to the application of science to the clinical aspects of medical education, the inspiration of reform has been the prevention of disease . . . obviously curative medicine and remedial surgery must have immediate priority, but the ultimate goal is prevention."

In the report it is demonstrated that the private medical practitioner is really to be looked upon as an outpost of the national organization of State medicine. The following paragraph culled from the report shows that State medicine in England has made already a considerable amount of progress.

"Two million children are inspected every year, and all children, healthy or sick, are now under medical supervision in school or at school clinics. Similarly, the Public Health Service has been concerned in dealing with early cases of infectious disease, infancy and child welfare, and with the establishment of tuberculosis and venereal disease clinics for dealing with cases of these diseases. Under the National Insurance Act, thirteen million persons are entitled to medical advice when they begin to ail. In the medical schools, too, there has been an immense development in the use of outpatient departments and children's clinics at hospitals, and there has been a wide movement in favor of the study of disease in its earliest stages. This is all to the good. But the student must be brought into it.

Indeed, the entire report is intended to show that

in the new curricula, which have been introduced, preventive medicine, dentistry and public health are of the first importance, and that, in fact, preventive medicine is doing much good now and is rapidly developing into the medicine of the future. As the practice of modern medicine is being revolutionized, so will medical education have to be revolutionized to keep pace with its developments.

The author of this eloquently phrased plea for preventive medicine ends by suggesting that Great Britain may well serve as an international centre and clearing house for the world and pays the following tribute to this country. "Some of the medical schools of the United States are better equipped than anything there is in England and this gives them larger facilities for internship, for private and special wards, for laboratory work, for the keeping of records, and for research; their students are usually senior to ours in age and learning; their total course of training is generally longer; and in certain departments of surgery they claim to be ahead of us. We have much to learn from their vision and capacity."

The report certainly does show that medicine is being reborn in Great Britain, that is, that the character of medical practice is undergoing a radical change. While it is undoubtedly satisfactory and encouraging that disease should be prevented rather than cured, and while it is obvious that with this end in view medical education must undergo a change, the report also reveals another point which to the medical practitioner is by no means so pleasing. It reveals the fact that in England not only has the State already gained some control over the medical profession but that this control is increasing. Will this control eventually lead to nationalization of medicine, a result so eagerly advocated by the labor party? This party represented by the Associated Societies at the present time wields a great deal of influence over the doctors practising under the Insurance Act, because the majority of the patients belong to these societies. Moreover, these societies seem anxious now to demonstrate their power. If the labor party makes use of their political power to attempt to force nationalization of medicine, what will happen? Are the majority of the British medical profession in favor of it or not? It seems that this is the question which may be put before medical men of Great Britain in the future.

The report of Sir George Newman affords evidence that the character of the practice of medicine in England is changing and also that the State is assuming control and supervision over a considerable portion of the profession. Whither is it leading and where will it end? There is no doubt that American medical readers will watch events concerned with medicine in Great Britain with keen interest as it touches them closely. In any case Sir George Newman may be highly congratulated on having produced in the most recent report a masterpiece in its way. He can also point with legitimate and justifiable pride to the results which have proceeded already from putting into practice the tenets of preventive medicine and especially, perhaps, to the outcome from the inspection of school children. So far as it has gone in England modern preventive medicine has abundantly proved its value.

WHAT IS PHYSICAL EDUCATION?

Every war, doubtless from the first of them, has been accompanied and followed by lamentations over the scarcity of men of the first fitness for fighting. These lamentations have, in numerous instances, ancient and modern, been followed up with efforts at improving the health and physique of the rising generation along lines which, at the time, seemed suitable to produce the desired results. The suggestions of the need for physical education made by great thinkers, such as John Locke, Pestalozzi, Rousseau and Spencer, who had the welfare of the individual child at heart, have usually fallen upon deaf ears; but when the need for cannon fodder was felt and expressed by statesmen or warriors, attention has been given and something has been done to remedy the situation, even if it was ephemeral and useless.

Legislation for physical education in the public schools which has been successful in some thirty or more states (though it had been put in practice in but few of these) was the result of the war and not of the demand for such laws on the part of educators, although the latter recognized, in a feeble way, that physical education is at the root of all education and that the effectiveness and the economical working of the machinery for mental training depend on the bodily condition of the child with which it deals.

There was such a spasm of encouragement of physical development at the time of the Civil War, military drill being considered the best means for such development, and the influence of this movement still survives. There was a similar selfexamination for causes of poor physique and searching for means of improvement in England, following the Boer War. The Swedish system of gymnastics was chosen as the best method for muscular exercise, but the committee of investigation had the good sense to observe that, for a very large number of the children of the realm, not exercise but feeding was most needed and that the former without the latter would do more harm than good. Probably this was the most notable pronouncement in physical education

that has occurred, as it was the first official recognition that our attempt at a maximum unfolding of the physical nature of the child must be put upon the basis of adequate nutrition. Before that time everything in physical training was exercise; now it must be feeding, rest—then exercise. Our present nutritional work in schools may not have had its origin in this report of the British Committee, but it follows along the same line.

We have mentioned the Swedish System of gymnastics. This and the methods devised by Jahn and his followers in Germany and the systems which arose in other European countries all had a patriotic stimulus at the bottom of them and, while accepted by schools, had an eye to the furnishing of material for the army.

All these methods, ingenious as they were, failed to develop one hundred per cent. perfect men, and, though formal training in physical training exercises had gone on for a hundred or so years, the number of those imperfect for military purposes was about as great as it was in countries where no such training had been in progress.

In passing laws and arranging courses in physical education in our own land in the twentieth century there have been inherited in many quarters the tradition that physical education means only exercise. It it most unfortunate, for exercise has long been tried and found wanting, in itself, to cure our bodily faults or to develop our somatic possibilities. There is considerable in a name sometimes, and in the present case it means very much to the cause of physical education that the term should be considered as including every means, prenatal and postnatal, in the home, in the school and elsewhere, that can be brought to bear to make possible the bodily unfolding of the child.

It means, above all things, ample animal nutrition, rest, and fresh air; it includes the removal of physical handicaps that can be removed, protection against infections, and a hygienic atmosphere at home, at school, and in the community as a whole.

Physical educators, if they would have their wares properly evaluated in future, should be careful not to use a general term for the part, and not to present the public with athletics, or gymnastics, or medical inspection, under the name of physical education.

Even as a whole physical education is greatly limited as to what it can accomplish, for, through all its agencies combined it can hardly eliminate more than a fraction of the defects displayed by the draft, for a very large proportion of these are a part of our human and animal inheritance and are likely to appear (unless the eugenists can save the day) in the draft for the wars of the year 3000.

MOTHER AND CHILD WELFARE IN PALESTINE

A widespread and dire need for maternity and child welfare work in the Holy Land is being met by the Hadassah Medical Organization which is developing a complete system of infant welfare stations in Jerusalem and Tiberias, according to a recent report. The work is being financed through private donations and collections from organizations interested in the plan. The Hadassah Medical Organization has already done a great deal of active work in the region. In 1921, an infant welfare clinic was established in the old city of Jerusalem, affording to mothers in Palestine the first opportunity of receiving instruction and advice as to caring for their children in good health. The clinic was so well patronized that in less than two months it was necessary to open a second consultation centre, this time outside the city walls. The report goes on to say that, during nearly all of the first six months, the only assistance the doctors were able to have was that of volunteers from a women's organization in Jerusalem. There were no nurses, and only patent milk preparations were available. So a milk kitchen was established and equipped, two consultation centres, with nurses and doctors, opened, the "donkey milk express" started, and the work gradually extended to Jaffa and Haifa. Among the nationalities of the mothers frequenting the clinics were those of Persia, Arabia, Morocco, Turkey, Bakhara, and of course Palestine, and some from the nations of Europe and from America. In 1922, a large private donation enabled the Hadassah Medical Organization to establish a separate consultation clinic for Arab mothers and to employ an Arab speaking nurse, who is a graduate of a nurses' training school.

FOREIGN PUBLIC HEALTH OFFICIALS IN ALBANY

The worldwide and rapidly growing interest in public health matters received significant attestation in the recent visit to the New York State Health Department of the delegation of eminent foreign officials forming a part of the third international exchange of health officers arranged by the Health Section of the League of Nations at the invitation of the United States Public Health Service. The delegation as a whole was divided into three groups for the purpose of studying American administrative methods in public health. One group was sent to North Carolina and later came to New York, another visited Virginia and Massachusetts, and the third, Alabama and Pennsylvania. All three united for conferences at Washington and Johns Hopkins, and New York. The group that visited the State Department at Albany spent a week in that city. They studied administrative methods and problems of rural hygiene and municipal sanitation, visited the Bureau of Municipal Information, and the radio station that broadcasts the weekly health talks. The delegation included representatives from Poland, Holland, Germany, Chile, Russia, Mexico, and the Ukraine. The final report of their visit will be made to the Health Section of the League of Nations at Geneva.

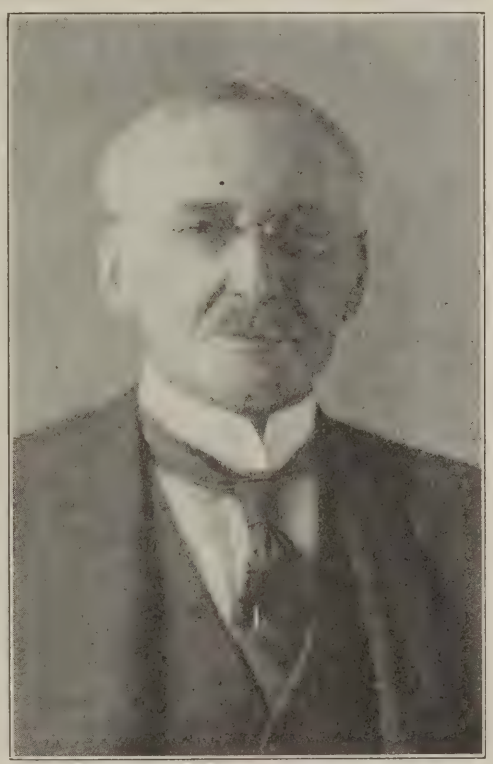
Obituary.

JACQUES LOEB, M.D., Ph.D.

New York.

Dr. Jacques Loeb, one of the leading scientists of the day, died on February 11, 1924, at Hamilton, Bermuda, during his annual visit to his marine experimental laboratory. His illness, from heart trouble, was of brief duration. The funeral services, which were private, were held on Sunday, February 17th, at the Rockefeller Institute for Medical Research, New York City, where Dr. Loeb had held since 1910 the position of head of the division of experimental biology.

Dr. Loeb was born in Germany in 1859. He studied medicine at Berlin, Munich and Strassburg, receiving his degree of M.D. from the University of Strassburg in 1884. After teaching biology and physiology in the Universities of Würzburg and Strassburg for several years, he came to the United States and was successively professor of these subjects at Bryn Mawr, the University of Chicago, and the University of California. In 1891 he married Miss Anne Leonard, of Easthampton, Mass.



JACQUES LOEB

While at the Rockefeller Institute, Loeb was a brilliant investigator in many branches of physiology, but his most characteristic work was done along the lines of the dynamic or chemodynamic theory of living processes. In his work on the physiology of the brain, he made original researches on the chain reflexes, and overthrew the position of Munk that the Rolandic area is made up of cellular sensory spheres by showing that the paralysis occasioned by each cortical excision will be abolished as soon as healing of the wound takes place. He was one of the first to settle the question of what order of magnitude is the smallest particle that can show all the phenomena of life, and his experiments on temperature coefficients established important criteria of physiological processes.

He made extensive investigations into the effects of electrolytic, thermal, and radiant energy upon living matter, and founded the theory of tropisms as the basis of the psychology of the lower forms of life. Even for the higher forms, he conceived all actions of fundamental importance as instinctive and having no relation to states of consciousness, and even these he believed might have a chemical basis. In 1889 he caused unfertilized sea urchin eggs to develop into swimming larvæ through treatment with hypertonic sea water. He carried his experiments farther by a preliminary treatment with butyric acid, producing an artificial fertilization membrane with complete development, following immersion of the eggs in a hypertonic solution before returning them to normal sea water. He showed further that the ovum has a selective, specific activating influence on the spermatozoon. In 1916 he reported raising several male parthenogenetic frogs to the age of a year, which had been produced by the Bataillon method of pricking the unfertilized egg. Thus the ovum can be activated by purely physicochemical means, although the result is an organism whose somatic cells lack one half the normal number of chromosomes.

Another line of investigation to which he gave many years was that of the composition of colloids which led to the development of his new theory contradicting the prevailing one that the proteins of living bodies were colloids. In 1917 he read a paper in which he denied the theory that war was necessary in order to preserve the virile virtues. He said: "If we succeed in substituting for the present one a new type of statesmen, who are familiar with and follow the development of the exact sciences, and who are willing and capable of applying the result of exact science to the intellectual, moral, physical and economical uplift of the masses, we shall at least diminish the danger of war."

Loeb was a prolific writer on his specialties and many of his works are still standards. He had honorary degrees from Cambridge, England, and from Geneva and Leipzig, and was a member of many prominent scientific bodies, both in this country and abroad.

HARRY S. FINCKE, M.D.,

Astoria, N. Y.

Dr. Harry S. Fincke died at his home in Astoria on January 21st after a long period of ill health, due probably to his prolonged service in the World War. He had recently returned from a sojourn in Florida, where he went in a vain effort to regain his health. His son furnished some of his blood in an endeavor to save his father's life through transfusion, but even this was to no purpose.

Dr. Fincke was born in Scotland fifty-five years ago. He was graduated from the Cornell Medical College in 1903. He was a member of the Queens-Nassau Medical Society, of the Long Island City Medical Society, of the Medical Association of Greater New York, and of the Associated Physisians of Long Island. During the World War, he was a major in the U. S. Medical Corps, and since his return had been active in rendering medical aid to soldiers and sailors through the Red Cross.

News Items.

Grip Epidemic in Mexico City.—A serious epidemic of grip has spread in Mexico City. More than 5,000 cases have been reported to the medical authorities, according to cable reports.

New Hospital Project.—The Physicians' Medical Hotel Company has purchased the fourteen story building at Fifty-seventh Street near Columbus Avenue, known as the Emerson Hotel, to be remodeled into a hospital.

Riverside Hospital Clinics.—A clinic in contagious diseases for physicians will be given the last Tuesday of each month at 3.30 p. m. by Dr. Charles Hermann and Dr. E. L. Benjamin. Boat leaves foot of East 134th Street, Bronx, at 3 p. m.

Workers' Psychiatric Clinic.—The United Workers of Norwich, Conn., in conjunction with the State Board of Health and the Norwich State Hospital, have opened a neuropsychiatric clinic. Miss Betsy Mitchell is organizing the social work.

Dr. Eichel Sails for Geneva.—Dr. Otto R. Eichel, director of vital statistics of the New York State Department of Health, sailed for Geneva on February 20th, to direct the epidemiological intelligence and statistics section conference of the League of Nations.

Dr. Alice Hamilton Appointed to Health Organization of League of Nations.—Dr. Alice Hamilton of the Harvard Medical School has been appointed a member of the permanent health organization of the League of Nations, which convened in Geneva during the week of February 13th.

Neurological Institute Maintenance Plans.—Announcement has been made of the organization of the cooperative committee of the Neurological Institute of New York by Miss Mabel Choate, vice-president of the board of trustees. The object is to promote the interests of the hospital and to raise funds for its maintenance.

Dr. Thomas B. Lee Addresses Health Officials.—Marriage of persons below average mentality was attacked by Dr. Thomas B. Lee of Camden, President of the State Board of Health, at the fourteenth annual meeting of the State and local health officials. He also advocated sterilization of criminals and imbeciles and birth control.

Dr. Abbott Demonstrates New Instrument.—An instrument by which heart beats may be heard at a distance has been perfected by Professor R. B. Abbott of Purdue University, who, according to newspaper reports demonstrated the device before a clinic of physicians attending the American Congress of Internal Medicine, in their session at St. Louis.

Rochester University Medical School Nearing Completion.—The University of Rochester Medical School will be formally opened in September, 1925, according to its present plans. The medical school and buildings are in process of completion and will be augmented by the Strong Memorial Hospital and a municipal hospital to be built by the City of Rochester.

Rockefeller Endows Oxford Chair of Biochemistry.—The trustees of the Rockefeller Foundation have offered £75,000, normally about $365,000, to Oxford University for the endowment and development of the department of biochemistry. The trustees decided to make their offer at a meeting December 5th, conditional on the university raising an unstated amount of money.

Status of Sheppard-Towner Act. — The Sheppard-Towner Maternity and Infancy Act has been accepted by twenty-nine States during 1923, increasing by forty the total number of States cooperating, under legislative sanction, with the Federal Government in activities for the reduction of maternal and infant mortality. The only States in which the act is not now operative are Connecticut, Illinois, Kansas, Louisiana, Massachusetts, Maine, Rhode Island, and Vermont.

Tuberculosis and Industrial Hygiene Course.—A six weeks' combined course on tuberculosis and industrial hygiene for medical practitioners has been arranged at the Academy of Medicine under the joint auspices of the Public Health Committee of the Academy, the New York Tuberculosis Association, and the Division of Industrial Hygiene of the New York State Department of Labor. The lectures will be held at the Academy of Medicine on Tuesday and Friday afternoons at 4:30, beginning March 14th and ending April 22, 1924.

Doctors Sail for Europe.—Sailing recently from New York to the Mediterranean, on the White Star Liner *Adriatic* are Dr. Charles L. Dana, Dr. M. Allen Starr, and Dr. Joseph Collins.

St. Luke's Hospital Elections.—At a recent meeting of the medical board of St. Luke's Hospital the following officers were elected for the year 1924: President, Dr. Henry S. Patterson; vice-president, Dr. Francis C. Wood; secretary, Dr. Winfield S. Schley.

$200,000 Bequest for Study of Children's Diseases.—Dr. Livingston Farrand, president of Cornell University, has announced a legacy of $200,000, from an anonymous donor, for the establishment of an endowment fund for research work in its department of pediatrics.

New York Has Lowest Death Rate.—The death rate in New York City last year was the lowest in the history of the city, being 11.72 to the thousand inhabitants. This is a reduction of 8.54 since 1898, when the present City of New York was consolidated. This means a saving of 120,093 lives and gives New York City the lowest death rate of any large city in the world.

To Discuss Psychoanalysis.—An open meeting of the New York League for Mental Hygiene of Children was held on February 28th at the Art Centre, 65 East Forty-sixth Street, at 8 o'clock. Dr. Joseph Ash and Dr. Elizabeth Severn spoke on Psychoanalysis and Prevention, and Dr. Eleanor Crosby Kemp on The Need of Art as Selfexpression.

Beth David Hospital to Further Its Work.—The annual dinner of the trustees of the Beth David Hospital, held on February 18th, at the Hotel Commodore, was marked by contributions of $40,000 to further its work. Among the speakers were James A. Hamilton, New York's Secretary of State, and Dr. John J. McGrath, president of the medical board of Bellevue and Allied Hospitals.

High Rents Cut Birth Rate.—High rents are partly responsible for a decreasing birth rate in Chicago, according to a report of State Health Commissioner Isaac D. Rawlings. The report shows 19.4 births for each thousand of population, as against 20.6 births for last year, and 11.7 deaths against 11.3 for 1922. The rest of the State has a birth rate of 19.5 and a death rate of 12.3 per thousand.

Dr. Loeb Eulogized.—Dr. Simon Flexner, head of the Rockefeller Institute, Dr. William H. Welch, president of the Johns Hopkins Medical School, and Dr. W. J. Osterhout, professor of physiology at Harvard, were the speakers at the memorial meeting, held at the Rockefeller Institute, in tribute to Dr. Jacques Loeb. Many friends and associates were present to hear the eulogies paid the great research worker.

New York Academy of Medicine Sites.—The trustees of the New York Academy of Medicine have received several advantageous offers for the new site at Park Avenue and Sixtieth Street. One of these proposes to give in exchange a site seventy-five feet front on Fifty-seventh Street, one hundred feet on Fifty-sixth Street between Eighth and Ninth Avenues, containing 5,500 square feet more than the Park Avenue site, and the sum of $500,000 in addition.

Neurology and Psychiatry Courses at Columbia.—Columbia University announces a series of courses in neurology and psychiatry for qualified graduates in medicine, as a part of its university extension and school of medicine. These sessions, lasting either eight or twelve weeks, will utilize the clinical material at the neurological department of Vanderbilt Clinic, the New York Neurological Institute, the Central and Neurological Hospital, and the Manhattan State Hospital for mental diseases.

Open Meeting on Proposed Medical Legislation.—At an open meeting held by the committee on civic policy of the Medical Society of the County of New York at the Academy of Medicine, the new medical practice act, proposed at Albany, which includes annual reregistration of physicians, was discussed. The narcotic bill, proposed by the Bar Association, was taken up. County Society members, as well as representatives of the health department, bar association, and the narcotic division of the police department were present. The point was taken up to limit the enforcement of the reregistration measure to a period of five successive years in order to organize the machinery to clean the State of quackery. After that time the physician need not reregister. However, it was stressed that no power to revoke a physician's license for failure to register is granted to the regents or anybody else by the proposed act.

Foreign Correspondence.

LATIN AMERICA LETTER

(*From our own correspondent*)

BALBOA HEIGHTS, C. Z., *January 21, 1924.*

HEAD TROPHIES

Panama, as the crossroads of the world, contains many medical curiosities from other countries. One of the most interesting of these are the shrunken heads of human beings and animals which come from Ecuador and are not infrequently offered for sale, particularly at those seasons when there is a large influx of tourists whose one desire seems to be that of donning Panama hats (which by the way are not made here but at Monte Christe and Jipijapa in Ecuador) and purchasing anything which is shown them. Not infrequently a very good head may be secured for fifty dollars gold, but of course the rule is to charge all that the traffic will bear. Several times cat or dog heads have been offered for sale and on one occasion the entire body of a negro, shrunk to a twenty-eight inch stature, was exhibited in a local barber shop. Human heads about two inches in diameter and complete in every particular are seen more frequently than any type of this "art." These are usually the heads of males, sometimes of negroes, sometimes of Indians, although once in a while a woman's head with long hair is shown. They are generally slate grey in color, the hair, beard and eyebrows being well preserved and the diminutive features being uncannily lifelike in their expression. It is always interesting to speculate just how the bones have been removed and the soft parts preserved and shrunken and always it is alleged that there is a great mystery about the process since the wild Indians of the Jibaro country are not at all hospitable to strangers and consider the process of head shrinking a sacred ceremony not to be disclosed to outsiders. It is stated that several persons who have allowed their curiosity about the matter to outrun their prudence have supplied fresh material for these primitive morticians. Several years ago a considerable number of photographic plates of the process which had been secured by an enthusiastic young Frenchman were shipped to France from here as a part of his estate.

While none of the medical men on the Isthmus knows for a certainty the entire process of reducing a head from normal proportions to those of a doll, enough data have been secured from passing travelers to constitute a fairly accurate knowledge. The head is severed as close to the trunk as possible and an incision made from the occipital protuberance downwards. The skin and soft parts are then reflected and all fat and tissue not necessary to preserve the features removed. The shell remaining is turned right side out after sewing up the incision at the back of the neck and the lips. Hot stones are then introduced and by a rotary motion a charring, shrinking and thinning of the tissues is produced. The head is then boiled in a strongly astringent solution, probably of high tannic and benzoic acid content. It is then packed full of very fine sand and strapped to a board which has a small hole drilled through it. The centre of the neck is directly over this hole and as the head, which is set out in the broiling hot sun, shrinks, the sand slowly is forced through the opening. While this is going on the features are deftly moulded, particular attention being paid to the preservation of the hair of the head, the brows and face. When the process is completed the head is filled with a reddish pitch which hardens and is only visible at the base of the severed neck.

It is remarkable that these heads are not at all revolting in appearance. On the contrary, the features are so skillfully moulded that there is something pleasing about the individuality of countenance which these heads possess.

MEDICAL ASSOCIATION OF ISTHMIAN CANAL ZONE

The 205th meeting of the Medical Association of the Isthmian Canal Zone was held at the Century Club in Panama January 21, 1924, as the guests of the Herrick Clinic. Dr. John J. Moore, the former secretary-treasurer of the association, was installed as president, Dr. K. P. Taylor, as vice-president, and Dr. C. R. Mueller, as secretary-treasurer. An interesting program was presented and after the completion of the discussions the association refreshed itself in a manner which would excite the bitter envy of similar organizations in the United States.

TEACHING HYGIENE IN CANAL ZONE SCHOOLS

Miss Jean and Miss Abbott, of the American Child Health Association, are at present on the Isthmus making a study of the teaching of hygiene in the public schools with a view to its extension and to a readjustment of the emphasis of the instruction in order that it may be better fitted to tropical life. While their report has not yet been made, the problem seems to be largely one of administrative rearrangement, since many of the difficulties usually met in the temperate zone do not exist here. Housing is well nigh perfect in the Canal Zone; it is not necessary to teach the basic lesson of the open window and ventilation in a climate where air in motion is essential to comfort. Bathing is another thing that our children do not have to be taught because frequent baths are necessary if one is to be allowed to associate with others. Daily exercise is the rule among Zone children. There exists, however, great need for teaching oral hygiene; the value of the well balanced ration is not well enough understood; and the inculcation of those personal habits which will prevent the spread of the sputum borne infections is continuously necessary. In addition to their work in American territory, Misses Jean and Abbott will inspect some of the schools of Panama, especially with the aim of cooperating with the Ministry of Public Education for the expanded teaching of public health pedagogical methods in the National Normal School. If their time will permit they also contemplate a visit to San Jose for a similar purpose. The Canal Zone Government through whose invitation these ladies are carrying on their work is cooperating heartily with them through the Health Department and the Division of Schools.

MARITIME QUARANTINE CONFERENCE

Official announcement of the Conference of Maritime Quarantine Authorities of the West Coast of South America for the purpose of standardizing and rationalizing quarantine methods in that litoral has

been made by the Panaman Government. The conference will convene on the morning of February 25th and will continue until February 29th. Invitations have been accepted by the Governments of Ecuador, Peru and Chile. The delegation from Panama is headed by Dr. Augusto S. Boyd, president of the National Board of Health. Panama's other delegate is Surgeon William Colby Rucker, United States Public Health Service, who is the secretary-general of the conference. Ecuador is sending Dr. Wenceslao Pareja, national director of health, and one other delegate to be announced later. From Peru will come Dr. Sebastian Lorente, national director of health, and Dr. Paz Soldan, professor of hygiene in the university, and from Chile, Dr. R. Corbalan Melgarejo and a delegate who has not yet been announced. The steamship lines running between Panama and the ports of Ecuador, Peru and Chile have granted favorable rates to the delegates and the members of their official parties and a considerable attendance from those countries is anticipated. From the United States, it is expected that Surgeon General Hugh S. Cumming and Surgeon S. B. Grubbs, quarantine officer of the Port of New York, will come as representatives of the United States Public Health Service, while Assistant Surgeon General John D. Long, United States Public Health Service, will attend for the Sanitary Office of the Pan-American Union. Colonel H. C. Fisher, Medical Corps United States Army, Chief Health Officer, will represent the Panama Canal. A representative of the British Ministry of Health is scheduled to be present and observers from France and other European countries will probably participate in the conference. The Rotary Club of Panama at its meeting of January 17th appointed a committee, of which Dr. D. F. Reeder, of the Herrick Clinic, is chairman, to cooperate with the secretary-general of the conference. The club will give a luncheon to the delegates. The Isthmian Canal Medical Association will hold a special meeting for the conference at Santo Tomas Hospital on February 28th. The session will be in Spanish and the program, which is being arranged by Dr. A. S. Boyd, chief surgeon of the Santo Tomas Hospital, will be presented by Panaman physicians. The society will also give a formal banquet to the conference.

LONDON LETTER

(*From our own correspondent*)

LONDON, *January 18, 1924.*

THE TEACHING OF MOTHERCRAFT

A congress on education was held recently in London at which some instructive topics were discussed and analyzed from the medical and psychomedical viewpoints. One subject discussed was the teaching of mothercraft to schoolgirls. Dr. Janet Campbell, medical officer to the Ministry of Health and chief woman medical adviser to the Board of Education, who presided, said they had to consider when was the best time for education in mothercraft to be imparted. Should they wait until the baby was born and the mother was attending an infant welfare centre, or was being visited in her own home by a health visitor, or should they try to reach her after marriage and before her baby was born? Or should they go one step farther back and attempt to teach the adolescent girl, at a secondary school, a continuation school, an evening institute, at a club or some such place? Or should they begin right away at the beginning and teach the older girls at the public elementary school, which was, after all, the only time and place that they could be sure of getting the girls who were to be the future mothers and make a beginning with them. Dr. Campbell advocated a limited method of teaching the science and duties of mothercraft, and said that the Board of Education had adopted the view that such teaching should begin with the older girls in the elementary schools. Miss Morson, superintendent of the Malvern Child Welfare Centre, said that girls should begin to learn the fundamentals of mothercraft at thirteen or fourteen years of age. It seemed to her that girls in the higher classes in the secondary schools, the boarding schools, the finishing schools, and in the Women's University should all be taught the elements of mothercraft. The teaching, she said, appealed to girls very strongly, and one had no difficulty in arousing their interest. The teaching of mothercraft would prove a great asset to the country in the future and Government grants should be made available for the purpose.

THE OLDER CHILDREN IN ELEMENTARY SCHOOLS

Sir Henry Hadow, president of the congress, was in the chair when the subject of the older children in the elementary schools was considered. Dr. P. B. Ballard, inspector, London County Council Education Committee, declared that England had two separate systems of education very badly coordinated, the elementary and the secondary. In London the brightest boys in the elementary schools passed on to the secondary schools, the next brightest to the central schools, excellent schools which were secondary schools in everything but name; but still there were about ninety per cent. of the children who remained in the elementary schools and left at the age of fourteen. This scheme was by no means satisfactory. It was satisfactory for ten per cent. of the children and very unsatisfactory for ninety per cent. How were they to do justice to the ninety per cent. who remained in the ordinary elementary school? It was true that, in London at least, these children were able to attend handicraft and domestic economy centres, a few schools having also special science and art rooms. But the bulk of the schools in England and Wales were not much better off now than they were forty years ago. The children were not taught a foreign language; they were not taught practical science, and they did not remain in school beyond the age of fourteen. The schemes of reform before the country had certain elements in common. They all agreed in regarding as an anomaly the existence of one system of education for the poor and another for the rich. They held that the distinction between secondary and elementary schools should be abolished; that there should be but one current of education, not two, and that the only distinction should be between the two stages of one process, that all children up to the age of eleven should be regarded as in the primary school, and beyond the age of eleven as being in the secondary school. To regard education from that point of view

they must alter their notions as to secondary education. This should not mean a grammar school education, but the education of the adolescent. The feature of the reform schemes was a definite clean cut at eleven years of age, the beginning of an important psychological period, the beginning of adolescence.

THE SOCALLED BAD BOY

The bad lad was the subject dealt with by Mr. Alexander Paterson, one of His Majesty's Commissioners of Prisons, before a session of the Training College Association. "How many bad lads are there?" asked Mr. Paterson. Every year seven thousand boys were brought up at police courts in England and put on probation; fifteen hundred boys were sent to industrial and reformatory schools, and another five hundred boys were sent to Borstal institutions. Another thousand went to prison who had never previously been in trouble at all. "I will make this rough guess," added Mr. Paterson, "that of every hundred boys leaving elementary schools one is a bad boy in the sense that sooner or later he comes into conflict with the law." Speaking from his experience among all the many bad boys he had known, Mr. Paterson said he had come to the conclusion that there were necessarily three elements in the commission of a crime. There was first the desire to do something wrong, a desire which everyone had at one time or another; secondly, the opportunity to satisfy the desire; and, thirdly, the absence or extreme weakness of any inhibition to the contrary. It was in respect to that last mentioned very necessary ingredient to the commission of a crime that one boy was different from the other ninety-nine boys in a hundred. The ninety-nine had been supplied by home or school training with an inhibition which the hundredth boy lacked. What psychologists called an inhibition theologians called conscience, but the inhibition often arose from the nature of one's social environment. The lad going to a high class school learned a thousand and one inhibitions, things one must not do or say.

A secondary school boy would learn five hundred inhibitions, while in the elementary schools there were fewer inhibitions. The first thing to do with the bad lad was to study his desires, and the second, to encourage the ordinary growth of inhibitions. How were these things being done? In this country we did not agree with the old methods of death or detention in the treatment of the bad lad who came within the clutches of the law. Therefore, throughout our system, a number of new methods were being tried in order to find out the right way of dealing with the bad lad. It was a remarkable fact that more of the bad lads were being dealt with out of the institutions than inside. Paying tribute to the Borstal institutions, he said that their houses protected the growth of inhibitions. Of every ten Borstal boys seven never got into trouble again. But they still had bad boys under twenty-one entering prison. Those responsible for His Majesty's prisons would like to shut the gate in front of every lad under twenty-one, but they were the servants of the courts and they had to open the gates. The Prison Commissioners, however, were doing their best. He believed that in time, if only they had special places to which bad lads might be remanded —not prison—it might be possible to determine more scientifically what really was wrong with the lad and what sort of treatment or training should be prescribed for him. There were three very clear ways in which the teaching profession of the country could help the bad lad. When he was at school he was often the least attractive fellow in the class, and that was the kind of lad upon whom the teacher should concentrate more than upon all the others. In regard to the boy's afterschool life, there was a natural temptation to every teacher to keep mostly in touch with his best boys. But it should be the duty of the teacher to keep particularly in touch with the bad lad, to make sure that he got a job and to look after the way in which he spent his evenings. He had been wondering whether it was not possible for the teaching profession to play a great part in the administration of the Probation of Offenders' Act. His third suggestion was that teachers should be honorary probation officers, to whom the regular probation officers should pass cases.

RADIUM AND DISEASE

Professor Sidney L. Russ lectured recently at King's College, London, on radium and x rays. Since the discovery of radium twenty-five years ago a vast amount of knowledge, he said, had been gained about the physical properties of radioactive substances, and perhaps the next quarter of a century would reveal with equal clearness the action which radium rays and x rays had upon living structures. These agents were very largely used in the treatment of disease, particularly in cancer, and there was little reason to doubt that they were important aids to the physician and surgeon, but at the same time exaggerated hopes in their efficacy were to be deprecated. The action of these rays on the tissues of the body were extremely complex, and, although a great deal of research work, experimental and clinical, had been done, their fundamental nature had not yet been established. In view of such complexity it was not to be wondered that finality had not been reached.

HOSPITAL SERVICE AT THREE PENCE A WEEK

At Brighton in Sussex a few years ago was initiated a scheme whereby workers who contributed three pence a week were assured of hospital accommodation and service for themselves and dependents without further charge. The scheme appealed to the governors of certain London hospitals, for while it made sure of a regular revenue, it did not place a heavy burden on anyone. It was thought that the scheme, though successful in the country, might not be workable in London, and two trial associations were therefore formed, one for "black coated workers," known as the British Provident Association for Hospitals and Additional Services, to which the annual subscription varies from £1 1s to £2 2s a year, and the other the Hospital Saving Association, for persons earning from £4 to £6 a week, the subscription being threepence a week or twelve shillings a year. Each organization obtained thousands of members, and now at the end of the trial year the accounts have been examined by experts, with the result that the scheme is declared sound and practicable. As all members pay through the association any suggestion of charity is removed.

Book Reviews

LABORATORY METHODS OF BLOOD ANALYSIS

Blood Chemistry Colorimetric Methods. By Willard J. Stone. New York: Paul B. Hoeber, Inc., 1923.

This book contains in a convenient form a compilation of the methods used in a chemical laboratory for blood analysis. Its chief point of variation from other outlines of laboratory procedures is the inclusion of a page or two of clinical comments at the end of each chapter. One chapter deals with the dietary control of disturbances of metabolism, and contains a list of neutral, alkali, and acid producing foods. The final chapter describes the test and maintenance diets of Joslin in the treatment of diabetes mellitus. The book is a useful one for both the laboratory technician and the clinician.

DIETETICS

The New Dietetics. By John Harvey Kellogg, M.D., LL.D., F.A.C.S. Battle Creek, Michigan: Modern Medicine Publishing Co., 1923.

This is a book of more than one thousand pages containing much that is found in the usual textbook on dietetics, as well as much not usually found therein. It is not necessary to mention the usual, therefore attention will be drawn to some of the unusual features which have impressed the reviewer. The pages relating to the food salts and minerals are valuable. Two tables are especially noteworthy. One gives the lime content of many of our most commonly used foodstuffs, including grains of lime to the ounce, weight of one hundred calories, weight of the usual amount of raw food for an ordinary serving and calories in an ordinary serving. The other gives the same data for iron. The table on vitamines is also a very good one.

Much useful information is given regarding various articles of food in that part of the book where each article is taken up separately and discussed. This discussion is, by the way, written in an interesting manner. There are in all forty-four tables contained in this book. More than thirty of these concern the composition of foods. The ones which I have mentioned regarding lime and iron give a fairly good representation of the value of these tables.

PHARMACOLOGY

Der Einfluss experimentell-pharmakologischer Forschung auf die Erkennung and Verhütung pharmakotherapeutischer Irrtümer. Von Professor Dr. Emil Starkenstein in Prag. Immunodiagnostik und Immunotherapie. Von Professor Dr. H. Selter, Direktor des Hygienischen Instituts der Universität in Königsberg i. Pr. Leipzig: Verlag von Georg Thieme, 1923.

These two monographs constitute the first volume of a series called the *Irrtümer der allgemeinen Diagnostik und Therapie sowie deren Verhütung,* written under collaboration by several authors and edited by Prof. Dr. J. Schwalbe of Berlin. The first monograph deals with the influence of experimental pharmacological studies upon the recognition and avoidance of pharmacotherapeutic errors. Pharmacological studies are not always directed toward the practical application of the subject investigated and it is a well known fact that clinicians and those engaged in the theoretical side of medicine have very often and for a long time worked side by side without cooperation and even without recognition of the importance of each others work. Consequently pharmacotherapeutic practices have persisted as a result of conservatism even though the results of experimental pharmacological investigation had rendered them obsolete. The author endeavors to initiate a more rational therapy by showing the relationship of pharmacology to drug therapy and the mistakes commonly made as well as how to avoid them. Symptom complexes are divided into two groups: 1, those which do not appear as the result of disease entities, and 2, independent symptom complexes which are produced by changes of definite organic functions. The conception of this work and its execution is original.

Immunodiagnosis and immunotherapy depend upon the phenomena occurring in the bodies of infected persons or animals and are applicable to the diagnosis and therapy of infections. The difficulties in this branch of medicine are much greater than in chemical investigations or drug therapy, in which there is at least one known substance the action of which is not based entirely upon theory. Immunodiagnosis is made even more difficult because the investigations are usually not made by the clinician or general practitioner but by the laboratory. Both immunodiagnosis and immunotherapy are based upon Ehrlich's theory of antigen and antibody. The subject of immunodiagnosis includes the elements of agglutination, precipitation, bacteriolysis and complement fixation, the use of protective ferments and the Abderhalden reaction, and the use of bacterial toxins. Immunotherapy includes serotherapy, vaccinotherapy, bacteriotherapy, specific and nonspecific stimulating therapy and proteotherapy. The use of these various agents in infectious diseases is discussed in detail.

THE DAILY WALK

Walking for Health. By Alvah H. Doty, M.D. New York and London: D. Appleton & Co., 1923.

This practical little guide of less than fifty pages is very timely for perhaps at least two reasons. First, it should help to counteract the sedentary habits brought about by the present day necessity that so many have to meet of traveling long distances to and from daily work in some form of conveyance, be it automobile or subway; for, much as there is to say in favor of straphanging as a difficult physical feat, it surely cannot be classed as a beneficial form of exercise. Second, this little book should make a very definite appeal to the many—and their number seems to be constantly increasing—who find much joy in hiking, climbing and the like, either alone or in groups. They will find their pleasure in walking justified, not only for its own sake, but because systematic daily exercise in the open air lays the foundation for much of the body's health and strength.

Some of the advantages to be derived from the

daily walk are that it can supply the most effective and natural means of protection against the congestion of internal organs when this is not caused by disease; it exercises not only the great muscles of the legs, but the rest of the external muscles of the body, and in this way increases the capacity of the chest and provides, according to Doctor Doty, all necessary exercise except that called for in the instance of special athletic work.

"The following pages contain truths of great importance in the preservation of health and the prolongation of life," writes Dr. George David Stewart in his introduction to the volume. "These truths are not new; they have been known for a long time; in fact, so well known that they have become familiar and that familiarity has bred contempt. However, the attractive, concise manner in which they have been restated by Doctor Doty will, I hope, impress their value upon every one into whose hands this little volume falls."

CONTAGIOUS DISEASES

Infektionskrankheiten. Von Geh. Med. Rat Prof. Dr. M. Matthes. Mit 1 Abbildung, 19 Kurven und 1 farbigen Tafel. Zweite, verbesserte und vermehrte Auflage. Leipzig: Verlag von Georg Thieme, 1923. Pp. 156.

This is a revised edition of No. 9 of the series of *Diagnostische und therapeutische Irrtümer und deren Verhütung, Innere Medizin.* It deals with the subject of acute contagious diseases. Inasmuch as the diagnosis in these diseases depends to a great extent upon the laboratory, there must be cooperation between the diagnostician and the laboratory worker. However, as the laboratory is neither infallible nor the only method of arriving at a diagnosis, it should be supplemented by clinical study. A negative bacteriological and serological finding must be carefully and circumspectly interpreted; even a positive finding may be erroneous. The examination of the blood and urine should not be neglected as they frequently reveal valuable information. The value of the blood examination is particularly stressed. The diseases in which diagnostic and therapeutic mistakes are likely to be made are discussed.

ELECTROTHERAPY

The Note Book of an Electrotherapist. By Mel. R. Waggoner, M.D. Chicago, Ill.: McIntosh Electrical Corporation, 1924.

There is widespread interest among physicians today in the newer methods of electrotherapy which were extensively applied in the war hospitals and which are being put more and more into clinical use. There is a distinct need for the adequate teaching of electrotherapeutics in our medical schools and postgraduate institutions and also a distinct need of clearly written textbooks free from individual overenthusiasm or commercial influence, giving the proved essentials of electrotherapy and physiotherapy.

Dr. Mel. R. Waggoner, who has been giving lectures on electrotherapy in the employment of a manufacturer of electrical apparatus, has written a booklet of 173 pages pertaining to the practical applications of electrotherapeutics. In his much too short description of the fundamentals of electricity, he fails even to mention static electricity with its limited but important uses. He also fails to say anything about the rationale and application of radiant light and heat, considered an indispensible introduction to almost any form of electrical application with the exception of diathermy. He describes only the apparatus manufactured by his employers. Under therapeutics, he gives a detailed description of his technic in eye, ear, nose and throat cases, while the treatment of chest conditions is dealt with under the chapter on electrodiagnosis. A separate chapter deals with the description of the application of his pelvic multimode, which is some sort of a shotgun apparatus through which all conceivable pathological conditions in the pelvis can be aimed at.

Dr. Waggoner's *Note Book* has its useful purpose in serving the students of his course and the buyers of one make of electrical apparatus. It is to be hoped that the concerted efforts of those practising electrotherapy in a serious way will soon be able to give the medical profession courses of instruction and textbooks on the same plan as the other recognized specialties of medicine.

RACE DECADENCE

Race Decadence: An Examination of the Causes of Racial Degeneracy in the United States. By William S. Sadler, M.D., F.A.C.S. Illustrated. Chicago: A. C. McClurg & Co., 1922.

Notwithstanding the suspicion that the author entertains pessimistic views as to the future of the American people, if we can judge correctly by the subtitle of this work, we are assured by the author himself that he is not a pessimist, and that even though this volume may not offer the most pleasant reading from the viewpoint of the future, there is still balm in Gilead. He also assures us that the present volume is to be followed by others which will deal with race betterment, and will present "the encouraging and more optimistic side of this momentous question." For this let us be thankful. We are hearing so much these days of the menace to white supremacy of a certain religious type and brand, that our optimism as to the actual superiority of the white brand of humanity is being seriously shaken by the thought of what those terrible colored and semitic minorities have in store for their superior white majorities, not only in the United States but in other countries as well.

The present volume deals with race decadence under two heads, physical decadence and mental degeneracy. Whichever way we turn, the race in America is surely in a bad way, and the future looks dark indeed. Considering the increase in nervous and mental diseases, and the prevalence of physical disease, much of which is on the increase, there can be no doubt that the integrity and stability of the American people are threatened, according to the author. And his data undoubtedly confirm his worst fears.

Fortunately again, the author declares that he is not immediately alarmed over the threat of the conditions which confront us, and which he has endeavored to portray in his book. He still has great faith in the future greatness, attainment and development of the American people, but he feels it his duty to point out the evil influences which are

at work tending to jeopardize the white races in general and the American stock in particular. The volume is filled with data collected from innumerable sources, it is well written and arranged, and altogether makes interesting though not very encouraging reading. Let us hope that the promised optimistic volumes will appear shortly and that they will show us something of the sunny side of our national future.

SURGERY OF LOWER EXTREMITIES

Verletzungen und chirurgische Krankheiten der unteren Extremität. Von Professor Dr. Erich Sonntag, Vorstand des Chirurgichpoliklinischen Instituts der Universität in Leipzig. Mit 25 Textabbildungen. Leipzig: Verlag von Georg Thieme, 1923.

This monograph constitutes the eleventh number of the surgical section of *Diagnostische und therapeutische Irrtümer und deren Verhütung,* written under the collaboration of several authors and the editorship of Schwalbe. The various injuries and surgical diseases of the lower extremity are discussed in detail with emphasis upon the important points which enable one to avoid diagnostic and therapeutic mistakes. The subject matter is treated topographically, rendering reference to the various diseases affecting the different regions easy.

INTERNATIONAL CLINICS

International Clinics: A Quarterly of Illustrated Clinical Lectures and Especially Prepared Original Articles by Leading Members of the Medical Profession Throughout the World. Edited by Henry W. Cattell, A.M., M.D., Philadelphia, Charles H. Mayo, M.D., and others. Philadelphia and London: J. B. Lippincott Company, 1923.

Twenty-eight authors contribute to this interesting volume. The subjects considered include instructive articles on the Therapy of Allergic Diseases (Van Leeuwen), The prevention of Falling Hair (Van-Harlingen), Cancer Considered as a Constitutional Disease (Bulkley), Psychology of the Unconscious (Bowers), Thyroid Therapeutics (Berkeley), and others equally interesting and instructive. The volume is in all respects the equal of its many excellent predecessors in this series and constitutes a valuable addition to the physician's library.

POISON IVY

Rhus Dermatitis. From Rhus Toxicodendron, Radicans and Diversiloba (Poison Ivy). By James B. McNair. Chicago: The University of Chicago Press. 1923.

This book of 298 pages represents an enormous amount of work conscientiously done; and, so far as the reviewer knows, is the first complete work dealing with poison ivy. Many physicians who are interested in the subject have undoubtedly encountered McNair's articles in various journals devoted to medicine, botany, chemistry and so forth; some of these isolated publications are incorporated in this volume. With possibly a single exception, every conceivable phase of the subject of ivy poisoning is taken up in great detail. The work is divided into sixteen chapters, together with an appendix, a long bibliography and a nearly complete index. There are fifteen illustrations and three plates, showing tracings of leaves of rhus plants, cross sections of various plant preparations, microphotographs of sections of affected skin, and so forth. It is to be regretted that the author omitted a series of photographs depicting the different poisonous plants as they are encountered in their natural state.

Beginning with the history and distribution of the poison ivy plants, the author takes up their morphology and anatomy, both gross and microscopic; the origin and occurrence of the poison; its chemistry; the transmission of the poison from plant to person; the pathology of rhus dermatitis; internal poisoning from rhus; immunity; remedies. The last chapter is entitled A Contribution to the Chemotherapy of Rhus Dermatitis and Tentative Method for Treatment. Each chapter has a complete summary, adding greatly to the value of the text.

The book is incomplete, however, with respect to treatment of ivy poisoning. The work of Dr. A. Strickler, of Philadelphia, who has written several articles on the subject of treatment by means of injection of alcoholic extracts of rhus toxicodendron, is not even mentioned by McNair. In the reviewer's opinion, this is a grave and unfortunate omission. Strickler's treatment has produced excellent results in the hands of several practitioners of good repute. It is to be hoped that a new edition of the book will include this important phase of treatment.

HEALTHY MOTHERS AND CHILDREN

Healthy Mothers. By S. Josephine Baker, M.D., D.P.H. Boston: Little, Brown & Co., 1923.

Healthy Children. By S. Josephine Baker, M.D., D.P.H. Boston: Little, Brown & Co., 1923.

Two acceptable little volumes, one devoted to the health of the expectant mother and the other to the health of the growing child. Innumerable books on these two subjects have been written. These little volumes contain no more than has already been written and reiterated. But they are well got up, easy to handle and comprehensively and cheerfully written. They can therefore be recommended without qualification to the woman who wishes to have the best practical information on the subject and uptodate methods in the nursery.

THERAPY

Medikamentenlehre für Krankenpfleger und Krankenschwestern. Dr. Paul Fleissig. Mit einem Vorwort von Professor Dr. R. Staehelin. Fünfte, vermehrte und verbesserte auflage. Berlin, Wien: Urban & Schwarzenberg, 1923.

This is the fifth edition of a handbook on the use of drugs and other remedies, intended for use by nurses. In a brief and interesting manner the author describes the properties and manner of preparation of the most important therapeutic agents. Some practical points in the handling of the necessary apparatus are given. There is also a short discussion of the subject of disinfection. It is important that the nurse should know something about the care, keeping qualities and the signs of deterioration of the therapeutic agents in common use. All knowledge is power and must consequently increase the efficiency of the nurse. This book is a valuable adjunct to the usual textbook on materia medica for nurses, as it contains much material that is not usually found in such books, especially those printed in the English language. The English writers may well profit by this example. The physician will also find some valuable hints in this book. The drugs are

studied from the viewpoint of their origin, preparation and properties, as well as their therapeutic effects. The remainder of the book deals with the undesirable byeffects of drugs, practical nursing hints and miscellaneous matter which every practical nurse should know.

DIABETES

Uber Eiweissbeschränkung des Diabetes gravis. Von Prof. Karl Petrén. Unter redaktioneller Mitworkung von Dr. S. Lang, Karlsbad. Halle a s.: Carl Marhold Verlagsbuchhandlung, 1923.

This monograph constitutes Band viii, Heft 5 of the series of *Verdauungs- und Stoffwechsel-Krankheiten,* edited by H. Strauss. Inasmuch as the starvation method of treating diabetes has not proved entirely satisfactory, the author has endeavored to develop the method of restricting albumin in the severe cases of diabetes, thereby avoiding the dangers of undernutrition and acidosis. The case histories cited accurately indicate the quantity of food ingested, the daily determination of the blood sugar content and of the excretion of nitrogen, the urinary sugar and of the acetone bodies. The dietetic measures used are described in detail and the results obtained are presented in tabular form. The subjects of blood sugar, carbohydrate tolerance, body weight and the general condition of the body and acidosis are discussed in the light of the results obtained. The subjects of nitrogenous metabolism in diabetes, the pathogenesis of acidosis and the sensitiveness of the organism to nitrogen in severe diabetes are discussed from the theoretical standpoint.

Medicoliterary Notes.

When diploma mill doctors deal death, the public is horrified. When genuine doctors ask for laws to protect the people from quacks and charlatans, a large and vocal part of the public sides with the get-degrees-quick imposters and takes up their cry of bigotry, monopoly, and persecution. This is the history of medical legislation everywhere. And, since legislators hear the voice of the people much more clearly than the voice of the expert, the diploma mill doctor who lacks knowledge, training, and professional honor continues to practise.—*N. Y. Times.*

* * *

The late Dr. Stephen S. Colvin was the writer of an interesting article in a late number of *School Life,* in which he traces the history and development of psychological tests from the Binet-Simon, originating in 1905, to the form used at present, known as the Stanford-Binet tests, adapted by Lewis M. Terman.

* * *

A recent article on Russia states that Ivan Michurin, known as the "Russian Burbank," whose experimental garden was visited before the war by botanists from all over the world, has had to discontinue his scientific work and take up private employment in order to support himself. One of his latest achievements was the breeding of a pear so intensely sweet that he gave it the name of "substitute sugar."

* * *

Certain phenomena in connection with earthquakes, it has been found, cannot be recorded, even by seismographs, but they produce upon animals certain biological effects, frequently manifested before the shock is registered. Dr. Hans von Hentig, of Munich, has made a study of such effects and reports his results in a recent issue of the *Journal of Comparative Psychology.* He has found that some animals, before an earthquake, evince great restlessness; others, a striking lethargy; others peculiar mental disturbances. Even fish show great excitement. In Cuba tame house snakes are kept because they always flee into the open before earthquakes, thus warning the household.

* * *

Where the Dinosaur Hid Its Eggs is the title of an article of unusual interest in *Asia* for January. This is an account of the discovery of the ten million year old dinosaur eggs, found in Mongolia by the Third Asiatic Expedition under the leadership of Roy Chapman Andrews. These eggs are now on exhibition at the American Museum of Natural History in New York City.

* * *

That Samuel Butler, author of *The Way of All Flesh,* as good as prophesied the psychoanalyst, is the opinion of Robert Graves, writing in the London *Spectator.* "He looked forward to a time when crime and illness should be interchangeable terms; and the 'straightener' was to be a man to whom patients confessed their delinquencies, and who undertook to cure them."

* * *

Three late books on subjects of interest to physicians, and of special value to students taking up the study of medicine, are *The Coming of Man,* by Prof. John M. Tyler, a study of evolution; *Population Problems,* by Prof. Edward B. Reuter, of the University of Iowa, a discussion of world population from the sociological point of view; and *Studies in Evolution and Eugenics,* by S. J. Holmes, professor of zoology in the University of California.

* * *

Aromatics and the Soul is the striking title of a late book, the author of which is named Dr. Dan McKenzie. This volume might be described as a philosophy of smells, for the author has apparently made an inventory of the characteristic smells of all the chief cities of the world, classified them, and described them. When he himself has not visited a city and so had no olfactory impression of it, he quotes the sensations of other writers.

* * *

When the Soviet Government of Russia nationalized the property of the heirs of Chekhov, the dramatist, they found in a safety deposit box an unpublished play and a history of medicine in Russia.

* * *

An article in a recent issue of *Natural History* describes curious little creatures known as snow worms. They resemble tiny black eels and are frequently found on the snow-covered slopes of high mountain ranges. At about four in the afternoon they appear in millions on fields of dry snow and remain all night, probably feeding on minute algæ. As soon as the sun appears in the morning, they burrow back again into the snow.

* * *

Civilization and the Microbe is the title of a late volume by Arthur I. Kendall, published by the Houghton Mifflin Company. The author's contention is that "in reality civilization owes much to the microbe,"—that most microbic action is beneficent and essential for the maintenance of life on the globe, in spite of the fact that a comparatively small group of bacteria are hostile to mankind.

* * *

The last several months have brought forth a sizable group of interesting novels. Among these might be mentioned Conrad's *The Rover;* Swinnerton's *Young Felix;* Willa Cather's *Lost Lady;* May Sinclair's *Cure of Souls; The High Place,* by James Branch Cabell; *Antic Hay,* by Aldous Huxley; *The Centaur's Wife,* by Cyril Hume; *The Puppet Master,* by Robert Nathan; *J. Hardin and Son,* by Brand Whitlock; *Heart's Blood,* by Ethel Kelley; *The Sun Field,* by Heywood Broun; *Don Juan,* by Ludwig Lewisohn, and *North of Thirty-Six,* by Emerson Hough.

* * *

Interesting, if not particularly valuable as criticism, is the volume recently published by Seltzer entitled *Marcel Proust, an English Tribute,* by Joseph Conrad and Twenty Others. One of these critics finds Proust's writing of "the rarest beauty . . . poisonous as well as curious." Conrad says he "pushed analysis to the point where it becomes creative." Walkley finds his work to be "an extraordinarily minute psychometry."

Abstracts from Current Literature

GENITOURINARY DISEASES

The Risks of Prostatectomy.—Kenneth M. Walker (*Clinical Journal,* October 17, 1923) thus summarizes his conclusions: Where signs of obstruction exist operation is indicated, with as little delay as possible, since the persistence of this obstruction is a menace to the integrity of the kidneys. Even in the presence of associated lesions, such as those of the heart and lungs, prostatectomy offers a better chance than catheter life. Of all the dangers that may attend prostatectomy, those resulting from lesions of the kidney are the greatest. Operation is to be advised only after a careful investigation of the renal function. Where sepsis is present, or where there is reason to suspect the efficiency of the kidneys, it is advisable to perform the operation in two stages, first draining the bladder, and then, at a later date, enucleating the prostate. Operation should be advised in the earlier stages of enlargement when the symptoms are sufficiently severe to interfere with the patient's comfort or the residual urine is over two ounces. The fact that a certain percentage (about thirteen per cent.) of apparently simple prostates show, on microscopic examination, areas of carcinomatous changes, is an argument in favor of early operation, but it is not sufficient ground for removing every prostate that appears to be enlarged, although it causes no symptoms.

Warning Against the Use of Arsphenamine in the Treatment of Syphilis in a Hemophilic.—Jacob Rosenbloom (*Journal of Labratory and Clinical Medicine,* October, 1923) warns against the use of arsphenamine in hemophilia, citing the case of a colored man who had had continual bleeding from a tooth socket following a tooth extraction. His hemoglobin was forty per cent. red cells 2,300,000, and Wassermann four plus, with a history of an initial lesion fifteen years before. Transfusion was performed. As the bleeding did not stop following the use of horse serum and transfusion, an injection of 0.6 gm. arsphenamine was given, one hour after which all of the patient's gums commenced bleeding at an alarming rate, the hemoglobin falling to thirty per cent. The bleeding was controlled by the use of adrenalin compresses and another transfusion. It was impossible to check the bleeding by the usual means, and two weeks following the injection of arsphenamine, he died from anemia due to the hemorrhages.

Hereditary Syphilis.—Edward A. Morgan (*Canadian Medical Association Journal,* December, 1923) says that in dealing with the newborn luetic infant one must use discretion in the administration of salvarsan intravenously. If the child is markedly undernourished and anaemic, it is, as a rule, better policy to restrict one's treatment to the use of mercurial inunctions until such time as the general condition of the patient improves. Attention to the diet and maintenance of the nutrition of the young infant is quite as important as antiluetic medication. Needless to say, every effort should be made to maintain maternal nursing. Treatment of the nursing infant through the medium of the mother's milk has nothing to recommend it except ease of administration. Such treatment is both inadequate and ineffective. Persistent and regular treatment is one of the prime essentials to success. The greatest problem to be faced is the management of the Wassermann fast case—the child who reports for treatment usually with some tertiary manifestation and whose blood after two or three years' conscientious treatment is persistently very strongly positive. Such cases are, as a rule, symptom free, and the problem which demands solution is, Shall we continue intravenous therapy at the risk of producing arsenical poisoning, or shall we discontinue treatment and invite a return of symptoms such as those of cerebrospinal syphilis? Finally he says: "After four years' observation of such cases, I am becoming more and more convinced that the continuation of arsenical treatment for longer than two years is seldom if ever, advisable. The possibility of the disease causing serious trouble in later life is, I believe, greatly exaggerated, and my own experience is that the best plan of procedure consists in improving the child's general condition by intelligent dietetic, hygienic and tonic treatment, and in ignoring altogether the Wassermann reaction."

The Operative Treatment of Vesical Diverticula.—After an extensive study of vesical diverticula and the various methods of treating them surgically, J. Swift Joly (*Lancet,* September 1, 1923) arrives at the following conclusions: 1. Excision of the sac is the only rational treatment of vesical diverticula. 2. No single set operation is suitable for all cases. 3. If the case is complicated by prostatic or urethral obstruction, both conditions should be treated at the same sitting. When this course is not feasible, it is better to remove the diverticulum first, and treat the obstruction at a later sitting. 4. A preliminary cystotomy does more harm than good in most cases. 5. The presence of a calculus either in the bladder or in the sac is an indication for excision of the diverticulum. 6. As a rule the ureter lies in close relationship with the neck of the sac, and must be guarded from injury during the operation. 7. The contents of a diverticulum cannot always be evacuated by catheterization. The urine left behind after catheterization, often a considerable amount, the author calls "concealed residual." 8. The presence of concealed residual urine vitiates all tests of the renal efficiency which are carried out on bladder urine. To obtain an accurate estimate of the renal function it is necessary either to catheterize the ureters or to trust to an estimation of the blood urea. 9. The presence of a diverticulum is best diagnosed by means of the cystoscope, and its size and position ascertained by means of cystograms.

Gonococcal Vesiculitis.—David Watson (*British Medical Journal,* September 15, 1923) believes that the prevention of vesiculitis is the prevention of posterior urethritis and it can be insured once the anterior urethra has become infected only by local preventive treatment applied to the mucous membrane of the posterior urethra. All cases of gonococcal urethritis coming under treatment should as a matter of choice be subjected to treatment by the Janet irrigation method of treatment, using 1:8000 to 1:4000 solution of potassium permanganate, or, preferably, 1:400 acriflavine in physiological saline solution once in twenty-four hours. In cases of gonococcal urethritis which come under treatment after infection of the posterior urethra, the irrigation method of Janet is indicated in all except the hyperacute cases. No intraurethral instrumentation should be done in the acute stage, except in acute retention, which cannot be relieved otherwise. A suppository of one one-hundredth grain of atropine, twice daily, is useful in the prevention of complications. The treatment of the vesiculitis includes rest in bed, hot sitz baths and hot rectal irrigations, diathermy and atropine; vaccines are usually more harmful than helpful, but detoxicated vaccines are harmless and sometimes beneficial. Antigonococcal serums show variable results. Operation is occasionally required.

Salivary Urea and the Mercury Combining Power of Saliva: A New and Simple Index of Renal Insufficiency.—The following technic is advanced by Philip S. Hench (*Medical Clinics of North America,* July, 1923) for the test: The mouth is first washed out with water. A small piece of paraffin may be used to stimulate salivary flow, and two specimens of about eight c.c. each are collected. The first specimen, which removes food particles or excess of epithelial débris, is discarded or may be used as a check on the second specimen, which is used for titration. Five cubic centimetres of saliva are measured into a flask by means of a graduated pipette, and titrated with a five per cent. solution of mercuric chloride. The addition of bichloride of mercury is continued until one drop of the mixture, when added to a drop of saturated solution of sodium carbonate on a porcelain plate, causes a definite reddish brown tinge to appear promptly. Unless the brown color develops within about three seconds, this should not be considered the end point, and a drop or two of the bichloride should be added. For the sake of comparative uniformity the results may be reported in terms of cubic centimeters of bichloride of mercury required for each one hundred c.c. of saliva. This value is called the salivary urea index.

The concentration of urea in the saliva increases in approximately the same relationship as the blood urea concentration, although slightly lower figures are generally obtained. By means of this test it was observed that there

was a direct parallelism between the estimations of the mercury combining power of saliva and the estimations of blood urea. Its use is advocated as a routine procedure in the study of renal function, as an adjunct to the phenolsulphonephthalein test, and in place of the estimations of blood urea, when such estimations are not available. The values will not always agree absolutely, but will run parallel. The combined urea and ammonia nitrogen of saliva of normal persons is approximately from six to sixteen mg. for each one hundred c.c., representing from thirteen to thirty-three mg. urea for each one hundred c.c. of saliva. In urea retention the combined urea and ammonia nitrogen of saliva is increased in definite relationship to the increase of the blood urea nitrogen. The mercury combining power of saliva normally varies between thirty and fifty c.c. bichloride of mercury for each one hundred c.c. saliva; it increases with urea retention, and therefore this test may be used as a urea index.

GYNECOLOGY AND OBSTETRICS

Results in the Treatment of Abortion with the Oral Administration of Quinine.—Robert Poschacher (*Weiner klinische Wochenschrift,* August 9, 1923) was enabled to show that quinine is effective only in the uterus that is ready to undergo labor pains. The further the pregnancy has advanced and the more the abortion is in progress and the more the cervical canal or the cervical os is dilated, the better are the results with quinine. On the other hand, in incomplete abortion, the quinine acts the less, the smaller the placental remains which are left behind in the uterus and the more the uterus has returned to a state of rest. In incipient abortion the results were good in eighty-two per cent. of cases, whereas in incomplete abortion the results were good in only thirty per cent. Even if little or no success is achieved with quinine, it at least causes a dilatation of the cervical canal or it maintains the already acquired dilatation and thereby facilitates the emptying of the uterus, so that the uterus may be emptied in more than half of the cases without any dilatation. No injuries were observed to result from quinine; the associated unpleasant symptoms, such as tinnitus, a dull feeling in the head, and difficult hearing were only transient. This quinine was vomited rarely and only in highly febrile cases. The author believes that in every case of abortion, especially in the febrile cases, no curettage should be undertaken without previously having tried to empty the uterus with quinine.

Treatment of Acute Salpingitis.—Aleck W. Bourne (*British Medical Journal,* September 8, 1923) affirms that the mere recovery of the patient is not the only aim of treatment and that an attempt should be made to prevent sterility and also pelvic invalidism. He endeavors to accomplish this by the following line of treatment: 1, to prevent the spread of the acute disease and its extension to the the abdominal cavity proper; 2, to prevent the formation of chronic sequelæ in the shape of adhesive pelvic peritonitis, interstitial salpingitis, pyosalpinx, etc., and, 3, to enable the affected tube to resolve sufficiently to resume its normal function. The cardinal lesions requiring treatment are: 1, suppurative inflammation of the tubes, and later the ovaries; 2, suppurative pelvic peritonitis. The ideal is to arrest the destructive inflammatory process at the earliest possible moment by operating as soon as possible. The advantages of salpingostomy are as follows: 1, the spreading peritonitis and the formation of adhesions and peritoneal abscesses are checked; 2, the tube is drained and allowed to recover without the risk of further permanent changes; 3, it renders the formation of a pyosalpinx impossible, and permanent thickening of the tubal wall extremely unlikely. If after laying open the tube the mucous membrane shows gray patches of ulceration and gangrene, salpingectomy should be done. With early salpingectomy pregnancy is made possible, and if the tube is damaged too greatly salpingectomy will prevent invalidism.

Victor Bonney (*British Medical Journal,* September 8, 1923) believes that, contrary to the older teachings, early operation for acute salpingitis is not dangerous. While it is possible for an inflamed tube to recover sufficiently to be followed by pregnancy, such complete recoveries are rare. The author's experience with conservation of the tubes with drainage has not been particularly encouraging. If it can be shown that complete recovery of an inflamed tube is not uncommon, then the acutely inflamed tube must be conserved whenever possible, either by 1, not operating at all, or 2, conservative operation, either by simple drainage of the pelvis or by slitting and drainage. The author favors early operation.

W. Blair Bell (*British Medical Journal,* September 8, 1923) confines operative interference to posterior colpotomy in acute salpingitis to those cases in which a febrile reaction is present and in which pus is found in the pelvis. With pure gonococcus infections there is little danger to life and therefore surgical intervention may be tried in these cases. A number of mild cases of gonococcus salpingitis recover spontaneously. In most of the cases a cure is not likely to result from operation, inasmuch as the interstitial portion of the tube is usually occluded. Furthermore, the author doubts whether incision of the tube can lead to disappearance of the gonococci located in the mucosa.

Leonard Phillips (*British Medical Journal,* September 8, 1923) performed twenty reconstruction operations on the tubes in a series of twenty-five laparotomies. The operative technic included: 1, salpingostomy; 2, partial salpingectomy; 3, resection and anastomosis; 4, incision and resuture after canalization. Among these twenty cases, five pregnancies resulted. Except in one case no operation was performed more than two years ago. Three successes were in cases of bilateral salpingostomy, for closed club ended tubes—one in a case of bilateral resection and anastomosis, and one in a case of bilateral incision and suture after separation of adhesions with resection of one ovary. No successes have so far followed in cases of partial salpingectomy, and in operations performed at the uterine end of the tube.

Treatment of Prolapse of the Vagina in the Absence of the Uterus.—Of the various operative procedures used recently for the correction of a vaginal prolapse, the Neugebauer-Le Fort operation and its modifications have the disadvantage that they destroy the power of cohabitation and the various suspension methods require a certain length of the vaginal cul de sac. Ludwig Nürnberger (*Zentralblatt für Gynäkologie,* August 18, 1923), proposes a technic for cases in which suspension is impossible, whereby the power of cohabitation is preserved. If the uterus is absent a prolapse of the vagina can be corrected either by an operative elimination of the vaginal sac, which however does not prevent a recurrence if the defect in the floor of the pelvis is excessive so that the closed and destroyed vagina represents only a freely movable plate of fascia, or by suturing it to the anterior abdominal wall or to the promontory. But if the vagina is not sufficiently long, these methods are not applicable. In the case described by the author, a strip three cm. broad and ten cm. long was taken from the aponeurosis of the rectus abdominis muscle, the base of which was left in connection with the edge of the pelvis, and sutured to the upper edge of the posterior surface of the prolapsed cul de sac with silk sutures. Seven months after the operation the patient was very well satisfied with the operation. This technic is recommended for patients who desire preservation of the power of cohabitation.

Uterine Hemorrhage.—F. A. Cleland and Donald M. Low (*Canadian Medical Association Journal,* November, 1923) try to impress the following points:

1. The importance of impressing upon both the public and the profession that any abnormal uterine bleeding requires most careful investigation as soon as it appears.

2. The application of radium or x ray in gynecological cases should be under the supervision or be conducted on the advice of a physician or surgeon skilled in gynecological examination and diagnosis.

3. The decision as to the choice of treatment should not rest with the radiologist unless he is specially trained in gynecological diagnosis.

4. It should be an axiom that radium or x ray should not be used until an examination under anesthesia has been made, and if necessary, a diagnostic curettage or biopsy done.

5. Neither the surgeon nor the radiologist should have only one point of view.

6. The use of radium is contraindicated in cases of, 1, inflammatory lesions of the tubes or ovaries; 2, leiomyomata larger than a three and a half months' pregnant uterus; 3, large, pedunculated, subserous or submucous leiomyomata; 4, leiomyomata showing any form of degenerative change; 5, leiomyomata complicated by ovarian tumors; 6, leiomyomata producing marked pressure symptoms.

7. Radium should be used with great care in young patients in whom it is desired to retain active menstrual functions.

8. Radium is the treatment of choice in, 1, leiomyomata not larger than a three and one half months' pregnant uterus in women over forty years of age; 2, fibrosis uteri; 3, hyperplastic glandular endometritis; 4, polypi; 5, patients who are poor surgical risks.

9. The size of the dose depends upon, 1, the size of the uterus; 2, the age of the patient; 3, whether the function of childbearing is to be preserved or sacrificed.

10. Complications and unfavorable results are to be avoided only by a careful, discriminating, differential diagnosis.

Operative Treatment of Puerperal Bacillus Aerogenes Capsulatus Infection of the Uterus.—H. Brütt (*Zentralblatt für Gynäkologie,* August 18, 1923) states that this disease is met with much more frequently than is suspected and is not always properly interpreted. The author reports his seventh case, which was diagnosed clinically by a mass as large as two fists above the symphisis and by crepitation on palpation. The treatment consisted in extirpation of the uterus and of the right adnexæ. It had followed a previous criminal abortion. The local focus was apparent in this case and consequently the operation was indicated and led to a recovery. If, however, there is a general infection with the Fränkel bacillus an operation is superfluous and dangerous.

CLINICAL MEDICINE

Studies on the Relation of Tetanus Bacilli in the Digestive Tract to Tetanus Antitoxin in the Blood.—Carl Tenbroeck and Johannes H. Bauer (*Journal of Experimental Medicine,* April, 1923) found that the presence of tetanus bacilli in the digestive tract leads to the production of antibodies, which explains why tetanus infections are relatively uncommon in Peking, where a third of the population carry these organisms. Twenty-six such carriers showed considerable amounts of antitoxin in their sera, while with two exceptions, thirty individuals whose stools showed no tetanus bacilli showed sera free from tetanus antitoxin.

Influence of Calcium Chloride Upon Experimental Botulism.—Ivan C. Hall and Nelson C. Davis (*Journal of Experimental Medicine,* April, 1923) performed the work reported to study the action of calcium chloride in initiating socalled defense rupture to Bacillus botulinus. No such action has been demonstrated, although the doses given were sufficiently large to cause induration and in some cases sloughs by the subcutaneous route. Treatment of Bacillus botulinus with alcohol has been found markedly to decrease its toxicity for guineapigs, which confirms the work of Bronfenbrenner and Schlesinger. Toxin free spores of Bacillus botulinus have been found pathogenic for guineapigs.

Studies of Urinary Acidity.—N. R. Blatherwick and M. Louisa Long (*Journal of Biological Chemistry,* October, 1923) cite experiments to demonstrate that the increased acidity of the urine which is produced by eating prunes and cranberries is due to the synthesis and excretion of hippuric acid. The greater portion of this hippuric acid is derived from sources other than benzoic acid, and quinic acid is the most probable compound concerned in this synthesis.

Some Observations on the Creatinine Excretion of Women.—Laura McLaughlin and Katherine Blunt (*The Journal of Biological Chemistry,* November, 1923) report that the creatinine excretion of women is well within the range Shaffer reported for normal men (5.7 to 11.7 mg.) The creatinine coefficient for underweight women is apparently much higher than for normal women. Comparison of the day and night excretions of creatinine per hour showed no constant difference. The results obtained in this series of experiments indicate no relation between high protein diet and creatine excretion. Creatine was found to be an almost constant component of the day urine of one healthy woman.

Influenzalike Bacilli Isolated from Cats.—T. M. Rivers, and Stanhope Bayne Jones (*Journal of Experimental Medicine,* February, 1923) in examining the cultures from the throats of fifty normal cats in February, 1922, noted a number of colonies of gram negative, nonmotile bacilli on the rabbit blood agar plates, which looked like those of influenza bacilli. Seven strains were selected for study. They did not grow on ordinary media, but will do so on a medium to which an autoclave labile substance has been added as an accessory growth factor. These bacilli are similar to Bacillus parainfluenzæ in man. One strain was more exacting in its food requirements than Bacillus influenzæ and for convenience has been placed for the present in the parainfluenza group.

Reverse Selective Bacteriostatic Action of Acid Fuchsin.—John W. Churchman (*Journal of Experimental Medicine,* January, 1923) defines reverse selective activity as a bacteriostatic property whose selective feature is the reverse of that of gentian violet. Acid fuchsin was found to possess this bactericidal power, selective as between gram negative and gram positive aerobic organisms. The property was also possessed by simpler sulphonated substances and appears in some way dependent on the presence of SO_3 radicals. Bacillus pyocyaneus, an organism resistant to gentian violet, and one which causes persistent and annoying wound infection, is quite susceptible to acid fuchsin. The observations on the effect of sulphonated substances may give a lead as to the control of these infections.

A Fatal Case of Bacillus Acidi Lactici Meningitis with Autopsy Findings and Review of Bacillus Mucosus Infection.—Henry M. Ray (*Journal of Laboratory and Clinical Medicine,* January, 1923) reports the only case on record in the literature in which the Bacillus acidi lactici has been isolated from the spinal fluid. In the case described it was isolated twice each from the blood and spinal fluid during life. The patient presented the classical signs of meningitis, and the pathogenicity of the organism was demonstrated by its virulence for rabbits and guinea pigs. Death occurred after a twenty-eight day illness in the hospital, and the organism was also isolated from the brain, spleen and liver.

Copper as a Constituent in Woman's and Cow's Milk.—Alfred F. Hess, G. C. Supplee, and B. Bellis (*Journal of Biological Chemistry,* October, 1923) found that a sample of raw cow's milk contained 0.05 mg. of copper per litre, while three samples of pasteurized milk showed somewhat higher values, 0.6, 0.7 and 0.6. Two samples of human milk showed 0.4 and 0.6 mg. per litre. Infants therefore consume regularly small amounts of copper with their food. An examination of the urine of infants showed that copper is absorbed from the alimentary tract, as proved by its constant presence in the urine.

Alkali Reserve of the Blood Plasma During Protein Shock.—A. A. Eggstein (*Journal of Laboratory and Clinical Medicine,* June, 1921) used secondary proteoses and typhoid bacteria, given intravenously, as the toxic substance to produce shock in dogs. The animals showed a rapid and continuous decline in the alkaline reserve of the blood, and there was a definite relation between this and the lowered blood pressure in toxemic shock. The animal's life is in danger when the alkali reserve of the blood falls below thirty volumes per cent. Sodium carbonate given before the injection of a toxic protein prevented the carbon dioxide from reaching as low a level as in the untreated animals, and the alkali reserve which has been lowered in protein shock may also be restored by the intravenous administration of sodium bicarbonate, which apparently relieves distressing symptoms.

Studies in Carbohydrate Metabolism.—Frank P. Underhill and Gustav Wilens (*Journal of Biological Chemistry,* November, 1923) in order to determine the influence of a definite kidney lesion on the blood sugar content, produced experimental tartrate nephritis in normal fasting rabbits by subcutaneous administration of sodium tartrate in doses of fifty to seventy-five mg. per kilo. Following this there is a state of hyperglycemia in rabbits, and at times there may be increased kidney function as far as the elimination of sugar is concerned, Thus, the threshold to sugar appears to be alternately raised and lowered in tartrate nephritis. An injection of glucose results in a still higher elevation of blood sugar, which is in excess of that noted with tartrate alone.

Cross Fixation of Syphilitic Antigen by Tuberculous Sera.—Robert A. Kilduffe (*Journal of Laboratory and Clinical Medicine,* November, 1923), examined the sera in 104 cases of pulmonary tuberculosis in varying stages of activity, by the quantitative method of Kolmer. From the results obtained, there appears to be little support for the assumption that tuberculosis *per se* can give rise to a false positive complement fixation reaction with syphilitic antigens, and such positive reactions, when obtained in tuberculosis, necessitate an exhaustive examination for evidences of coincident syphilis.

Preservation of Blood for Chemical Analysis.—F. V. Sander (*Journal of Biological Chemistry,* November, 1923) advises using a mixture of 0.01 gm. of sodium fluoride and 0.001 gm. of thymol for each c.c. of blood in order to preserve it, so that an immediate analysis is not necessary. The values for nonprotein nitrogen, urea, uric acid, creatinine, creatine, and sugar will have the same clinical significance as those values obtained by an immediate analysis of the blood. The urea, uric acid, creatinine, creatine and sugar content of the blood can be kept constant for at least two weeks. The increase in nonprotein nitrogen value cannot be accounted for by an increase in ammonia and amino-acid content.

Studies on Diazoreaction.—N. Malmberg (*Acta Pædiatrica,* July, 1922) states that positive diazoreaction was observed in seventy-three per cent. of his cases of measles. The reaction lasted from one-half to eight days. It usually developed two to four days after the eruption of the exanthema, in a few cases simultaneously with the eruption, and in no case before the eruption. The reaction was at its height when decrease in temperature began. Positive reactions with a febrile temperature were often observed. A real connection could be traced between the leucocyte count of the blood on one hand and the diazoreaction on the other; a decrease in leucocytes was usually accompanied by positive reaction, and the rise in leucocytes usually occurred simultaneously with the disappearance of the diazoreaction.

Studies on Lymphoid Activity.—Relation between the time and extent of lymphoid stimulation induced by physical agents and the degree of resistance to cancer in mice.—James B. Murphy, Waro Nakahara, and Ernest Sturm (*Journal of Experimental Medicine,* April, 1921) report experiments in which mice were subjected to treatment with x rays or dry heat to stimulate the lymphoid cells. The animals were divided into two groups, the first of which received the treatment seven days before, and the other immediately before inoculation with cancer. The resistance of mice inoculated with cancer immediately after a stimulating dose of x rays is no higher than that of normal mice, and sometimes lower, while those inoculated with cancer a week after a stimulating dose of x rays showed a consistently higher degree of resistance, both in the number of takes and in the rate of growth of the tumor. The mice inoculated immediately after heating showed a definitely higher resistance than in the controls, while those heated a week prior to inoculation showed even a higher degree of immunity. The degree of immunity to the transplanted cancer seems to depend on the amount of lymphoid stimulation existing either at the time of, or following soon after the cancer inoculation.

MALIGNANT GROWTHS.

Relation of Carcinoma to Infection.—W. M. Ford Robertson (*Lancet,* August 18, 1923) examined a series of fifteen cases of various types of malignant disease with the following results: The anaerobic diphtheroid bacillus was demonstrated in cultures from all of the fifteen cases. In seven cases the bacillus was obtained subsequently in pure cultures in sufficient quantity for vaccines to be prepared and used therapeutically. In all the fifteen cases a mannite nonfermenting staphylococcus was isolated, and in about two thirds of the series streptococci were present also. In nearly every instance these staphylococci and streptococci were obtained only on anaerobic cultures. In one case subcutaneous fat, and, in another case, muscle of patients who were not the subject of malignant disease, gave negative results for the anærobic diphtheroid bacillus.

Cancer of the Breast.—Cecil Rowntree (*British Medical Journal,* May 5, 1923) says that there is no absolutely pathognomonic sign of cancer of the breast, but there is a sign of overwhelming significance, namely, the adhesion between the growth and the skin overlying it—not the coarse and obvious infiltration met with in advanced cases, but a much more delicate involvement, resulting in a faint dimpling of the skin which is often so slight that it may be visible only after careful examination in suitable conditions of light. In its earliest stages it can be made to appear by grasping the breast on each side of the suspicious nodule and trying to push the skin away from the tumor. By then looking along the surface of the breast it may be possible to perceive slight irregularity in the contour not hitherto apparent. If this sign be evident the author is convinced that a definite diagnosis of malignancy may be safely made with the utmost confidence, irrespective of the presence or absence of retraction of the nipple, alteration in the size and shape of the breast, enlargement of glands, or any of the other classical signs of cancer. On the other hand, absence of adhesion to the skin does not necessarily indicate that the tumor is benign, for the growth may be too small, or, if the breast be large and fat, the distance to the skin may be too great. The author prefers the Handley operation for cancer of the breast, adapted to the individual case.

Abdominal or Vaginal Operation for Carcinoma of the Cervix.—Josef Halban (*Zentralblatt für Gynäkologie,* September 15, 1923) believes that the abdominal and vaginal methods of attack on carcinoma of the cervix are of exactly the same value. Consequently the route of attack may be left to the ability and experience of the individual surgeon. However, the author is impressed by the fact that with a happy combination of the use of both methods the results in the treatment of cancer of the uterus may be considerably improved, particularly when certain patients, such as those with unusually thick abdominal walls and those unsuited to the Trendelenburg position because of internal complications in which laparotomy is most dangerous, are operated upon by the vaginal route.

Carcinoma of the Esophagus.—Porter P. Vinson (*American Journal of the Medical Sciences,* September, 1923) presents the following conclusions from a study of 154 patients at the Mayo clinic: 1. The incidence of carcinoma of the esophagus is higher than is generally believed. 2. The symptoms are ordinarily quite characteristic and their duration from onset to death is one year. 3. Men are much more susceptible than women, the ratio being five to one. 4. Carcinoma of the esophagus is rare is persons under forty years. 5. In men the lesions are most common in the middle third of the esophagus, whereas in women the growths predominate in the upper third. 6. Demonstrable metastasis is infrequent but occurs more often with lesions of the introitus and, therefore, is proportionately more common in women. 7. Previous trauma to the esophagus is not a definite factor in the causation of malignant esophageal disease. 8. The history of the case and the cautious passage of sounds are the most valuable factors in making a correct diagnosis. 9. The röntgenogram is of value in making a diagnosis, but is not infallible. 10. The esophagoscope is of limited value in diagnosis and treatment. 11. The mortality in untreated cases is one hundred per cent., and surgery offers little as a curative or palliative measure. 12. Radium or röntgen ray therapy is practically valueless. 13. Forcible dilatation of the malignant stricture gives greater relief than any other form of treatment.

Early Diagnosis of Cancer of the Stomach by Means of Gastric Analysis.—T. Izod Bennett (*British Medical Journal,* August 18, 1923) maintains that free hydrochloric acid is secreted by the stomach in the majority of patients with gastric carcinoma and that even in the presence of complete achlorhydria the gastric analysis rarely reveals the same findings as in pernicious anemia, chronic gastritis, or other forms of benign achylia. With the proper preparation of the patient the night before, and with careful gastric analysis of the fasting gastric contents on the following morning, evidence of stagnation, or of hemorrhage with pathological secretion, or both, will be found in the vast majority of cases of gastric carcinoma, which evidence is usually distinguishable from that of other diseases. The results of gastric analysis should not be interpreted on empirical or purely chemical grounds. Early carcinoma of the stomach can be detected by the evidence of stagnation, as by giving two teaspoonfuls of finely divided particles of charcoal in a glass of milk over night, with possibly an additional charcoal biscuit. The contents of the fasting stomach must then be evacuated carefully. Of fifty-three patients with gastric carcinoma examined, charcoal was demonstrable in the fasting gastric contents in thirty; signs of stagnation, such as foul odor, lactic acid, and a relatively high acid content other than hydrochloric acid, were found in twenty of the remaining twenty-three patients. Fresh or degenerated blood was found in thirty-five patients. The author did not find a single case of gastric malignancy which did not give a characteristic picture on gastric analysis and the only condition resembling it is gastric syphilis, in which there may be tumor formation with obstruction at the pylorus which is distinguishable from carcinoma only by histological examination. The Wassermann reaction is positive in these cases but not reliable.

MEDICAL JOURNAL AND RECORD

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Medicolegal Notes.

MERE WRONG DIAGNOSIS AND FAILURE TO CURE NOT ACTIONABLE

In an action for alleged malpractice, the theory of the complaint was negligence in making a wrong diagnosis and giving treatment accordingly, treating plaintiff's arm with vaccine for a supposed disease of the flesh and blood, instead of performing a surgical operation to remove infected bone. The evidence showed that the defendants were properly qualified and there was no evidence that any means of diagnosis used by them were improper, or that the exercise of care required the use of any other means in deciding what was the matter with the plaintiff's arm and how it should be treated. Plaintiff's own witnesses testified that the treatment adopted would have been proper for the disease of the soft tissues which defendants diagnosed plaintiff's ailment to be. But three expert witnesses testified that, in their opinion, upon certain facts which some of the evidence tended to prove must have been learned by defendants from the history of the case and their examination, the plaintiff had acute osteomyelitis, requiring a surgical operation; while six expert witnesses testified that upon those facts, in their opinion, the plaintiff was not afflicted with osteomyelitis when defendants were treating him for infection of the tissues, but that the treatment which was given was proper for what he really was afflicted with. The Indiana Supreme Court held, Edwards v. Uland, 140 N. E. 546, that the evidence did not make a case of negligence in making a wrong diagnosis.

Assuming, however, that the plaintiff was afflicted with osteomyelitis from the beginning and that the defendants were mistaken in their diagnosis, it was held that such facts alone would not give him a right to recover damages. A physician or surgeon is not an insurer, and does not bind himself to make a correct diagnosis and effect a cure or to respond in damages. He is only bound to possess reasonable skill and to use ordinary care, and if he makes a mistake in his conclusion as to whether a sore place on the skin has its origin in the flesh or in the bone under the flesh, he is excused from liability if, possessing reasonable skill, he has used ordinary care in making an examination, and has honestly reached the mistaken conclusion by the use of such skill and such care. In the absence of evidence of any lack of care in making the examination and forming his judgment, mere proof that the diagnosis was wrong will not support a verdict for damages. Not having warranted a cure, if he has reasonable skill and learning and uses ordinary care, he is not liable for the consequences of an honest mistake of judgment. A failure to cure is not enough, in itself, to raise an inference of negligence in the diagnosis and in the treatment adopted.

An instruction to the jury, that if a physician fails to use his unbiased judgment in diagnosing disease and allows any ill feeling toward another physician to bias his judgment or influence his treatment, and such action results in injury to the patient, the physician is liable, was held outside the issue and erroneous.

Judgment for plaintiff was reversed and a new trial ordered.

DRUGLESS HEALERS MUST PROCURE LICENSE IN OKLAHOMA

In proceedings against a socalled drugless healer for practising medicine without a license as required by the Oklahoma statutes, the proof showed and the defendant admitted that he maintained an office in Oklahoma City where he held himself as a person competent to treat those afflicted with various physical infirmities for a fee; and witnesses testified that he had advised them to use an epsom salts solution as an eye wash. This the defendant denied.

The accused claimed he was not practising medicine within the meaning of the statute, but that his system of drugless healing was to use nature's remedies to purify the blood and to stimulate the different organs of the body by physical culture and proper food selection and by fasting. It appeared that he also practised psychic suggestion.

Accused was convicted of practising medicine without a license in violation of section 8815, Comp. Stat., 1921. Another section, 8818, provides that any person claiming to practise any drugless system of healing must have attended a reputable college for a period of not less than twenty-seven months and passed examinations in anatomy, chemistry, bacteriology, pathology, surgery, physical diagnosis, etc. It appeared that the accused could not legally qualify as a drugless healer any better than as a regular practising physician. He admitted that he had made no attempt to comply with either of these statutes. Judgment of conviction was therefore sustained. Feige v. State, Oklahoma Criminal Court of Appeals, 215 Pac. 437.

REQUIREMENTS IN OHIO FOR PRACTICE OF LIMITED BRANCHES OF MEDICINE AND SURGERY

By the provisions of section 1274-2, Ohio General Code it is required that persons desiring to practice limited branches of medicine and surgery without preliminary examination shall establish to the satisfaction of the State Medical Board the fact of having actually practiced those limited branches for the full period of five years continuously prior to October 1, 1915. The affidavit of the applicant of his having had such practice is not conclusive upon the board. State ex rel. Copeland v. State Medical Board, 107 Ohio St. 20, 140 N. E. 660.

QUESTION OF NEGLIGENCE IN TREATMENT OF BROKEN FEMUR HELD FOR JURY

In an action against a hospital association by a patient it appeared that the plaintiff sustained a broken femur, and part of the treatment at the hospital consisted of pressure upon the fractural parts by means of a wire screen device shaped like a legging, the pressure being adjusted by loosening or tightening straps as the condition of the leg seemed to require from time to time. The adjustment of the pressure was left to the patient who was bedfast and in a badly crippled condition. The Nebraska Supreme Court, Doty v. Lutheran Hospital Assn., 194 N. W. 444, on appeal from a directed verdict and judgment for the defendant, holds that whether the leaving of the adjustment to the patient constituted negligence was a question of fact which should have been submitted to the jury.

The broken femur was examined by the surgeon only three times in seven weeks and a day, when the patient was sent home. Whether the infrequency of the examination constituted negligence was also held a question for the jury.

The patient contracted smallpox at the hospital, which was known to the physician who sent him away, but without informing the patient. Whether failure to caution the patient or instruct him as to the care he should observe in his contact with his family, one of whom became infected with the same disease, was negligence, was also a question of fact for the jury. The judgment was therefore reversed, for a trial on the merits.

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Disseminated Tuberculosis*

Caseous Tuberculosis of the Thymus and Myocardium

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Tuberculosis of the myocardium is comparatively rare. Laennec (1) in 1826 assigned tuberculosis of the heart as thirteenth in rank among the organs affected but gave no instance. To Townsend (2), of Dublin, belongs the honor of reporting the first case of myocardial tuberculosis in 1832. Haberling (3) in 1865 was able to collect twelve cases. (Some of these cases were pericardial only.) Sanger (4) in 1878 gathered from the literature and classified twenty-two cases including three of his own and omitted several doubtful cases. Valentine (5) in 1895 published a monograph with a summary of thirty-six reported cases.

Other cases have been reported by Mendez (6), Labbe (7), Barie (8), Kaufman (9), and others, which were summarized in a thesis by Fuchs (10) in 1898, which included two of his own, making a total of fifty-three cases. Anders (11) in 1902 gave a complete review of the literature and collected twelve additional cases, and added one case of his own, making seventy-two cases reported. Koch (12) in 1917 reported a case of conglomerate tuberculosis in the myocardium with pericarditis which was probably of the bovine type. Binder (12) in 1920 reported a case in the left auricle. Leuscher (14) in 1921 reported two cases. Massini (15) in 1921 added one case. Adding the case herewith reported makes a total of seventy-eight cases.

TUBERCULOSIS OF MYOCARDIUM

Tuberculosis of the myocardium, according to the studies of the authorities herein noted, appears in three types:

1. Tubercles, single or multiple, from pea to goose egg size (Binder) which may project beneath the endocardium or pericardium or be buried within the myocardium. In the majority of cases they consist of firm, whitish masses with caseous centres.

2. The miliary variety, in which grayish semi-transparent masses project as minute elevations beneath the endocardium. These occur most commonly on the ventricular wall.

3. The diffuse form of tuberculous infiltration, which consists of a more or less general diffuse tuberculous infiltration of the myocardium and is usually seen in connection with tuberculosis of the pericardium.

Tuberculosis of the myocardium most frequently occurs in the right ventricle, next in frequency is the right auricle, with but few cases occurring in the left side. The large tubercles occur most frequently, and the miliary variety is second in frequency. It is practically always secondary to tuberculosis elsewhere in the body. Demme (16) in 1886 reported a case in which no other tuberculous lesions were found in the body. Binder's (13) case of tuberculous tumor of the left auricle showed no other involvement of tuberculosis. In Massini's (15) case the tubercle bacilli, human type, were demonstrated in the myocardium and could not be found elsewhere in the body, and a careful histological search failed to reveal any other tuberculous lesion in the body. It occurs more frequently in males at any age, and the majority of cases reported occurred during the nursing age.

TUBERCULOSIS OF THYMUS

Tuberculosis of the thymus is apparently rare as a search through the literature reveals few cases reported. Demme, Vogel, Carpenter (17), Tixier, Feldzer (18) and others have reported cases occurring from forty-two days (Demme) to thirty-five years (Tixier and Feldzer). There are three varieties: caseous, miliary, and sclerotic. Primary tuberculosis of the thymus has been reported by Demme, who proved his case by animal inoculation, with no other lesion in the body. Vogel has reported a similar case. Tuberculosis of the thymus is usually caseous, and secondary to tuberculosis of hylic lymph nodes or lungs. In some cases only one lobe is involved.

REPORT OF A CASE

CASE.—The patient, a black male, aged eight months, was admitted to the University Hospital on February 27, 1922, with a history of having been a breast fed infant, delivered normally, weight at birth seven pounds, and apparently well up to the age of six months, at which time a cough developed which was continuous, and he breathed through the mouth. He cried when touched and slept a great deal. He had had a spasm four weeks previously and vomited about every day.

*From the Department of Pathology, University of Maryland.

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AUTOPSY

The body was that of a black child, measuring 66.5 cm. in length and weighing 4.8 kilo. It was emaciated. Rigor mortis was present. Postmortem lividity was confined to the dependent parts. The sagittal sutures were open and their edges rough in outline. The fontanelles were open and bulging. There was a large mass in the lower outer margin of the right eye, which was rather firm in consistency and appeared to be attached to the periosteum. There were three nodules on the scalp, one over each ear (one cm. above the ears) and one on the left parietal bone. These nodules were about two cm. in diameter and all appeared to be attached to the periosteum. At the angle of the right jaw, there was a nodule, irregular in outline, and the tissue showed marked bulging at that point. On the left side of the inferior maxillary there was a small nodule about one cm. in diameter. The right pupil was five mm. in diameter, the left four mm. in diameter and partially covered by a small scar which measured one by three mm. There were two teeth in the lower jaw. The lymph nodes of the neck were palpable, especially those in the left supraclavicular region, which were removed.

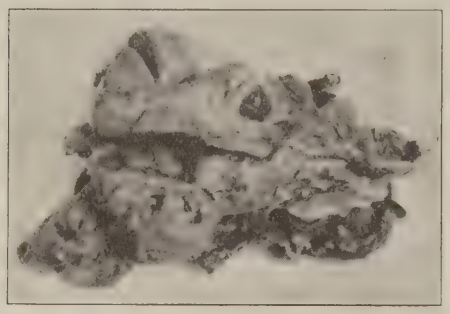

Fig. 1

Fig. 2

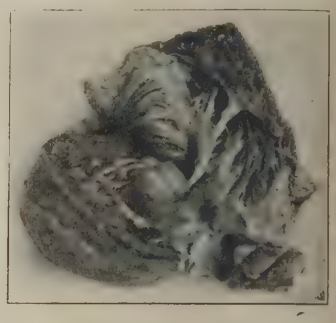

Fig. 3

Fig. 1.—Thymus with hylic lymph node attached (lower left corner) which was also attached to apex of right lung.
Fig. 2.—Heart showing grayish white nodule in left ventricular wall, four mm. in diameter.
Fig. 3.—Heart showing large grayish white nodule projecting into the right ventricle.

The muscles of the extremities were poorly developed, which gave the joints the appearance of being large in proportion to the shafts of the bones. There was a distinct left curvature of the vertebral column beginning at the fourth thoracic and extending down to the first lumbar vertebra.

On section, the subcutaneous fat was found to be scant. The peritoneum was smooth and dull in appearance throughout. The mesenteric lymph nodes were enlarged, firm and grayish white. There was one smooth, grayish white nodule on the serosa of the bladder—posterior surface. The proximal end of the appendix was bound down by adhesions. There was no free fluid in the peritoneal cavity.

The thymus extended down to the lower border of the third rib and was very firm in consistency, and there was a large hylic lymph node attached to it on the right, which was also very firm and measured 1.5 by 1 by .9 cm.

Heart.—The heart weighed thirty-five grams. The pericardial cavity contained about five c. c. of clear straw colored fluid. The parietal and visceral layers were everywhere smooth and glistening. The coronary vessels were distended with blood. On section there was found a grayish white nodule in the left ventricular wall measuring four mm. in diameter, firm in consistency. There was a large grayish white nodule projecting into the right ventricle, which occupied the space of the middle segment of the tricuspid valve. The tricuspid valve measured 2.5 cm.; pulmonary 2.6 cm., mitral 4 cm.; aortic 2.7 cm. Left ventricular wall 10 mm., right ventricular wall 3 mm.

Pleural cavity.—The left pleural cavity was free from adhesions and contained no fluid. The right pleural cavity contained no fluid, and there were some adhesions between the apex of the right lung and the lymph node which was also adherent to the thymus.

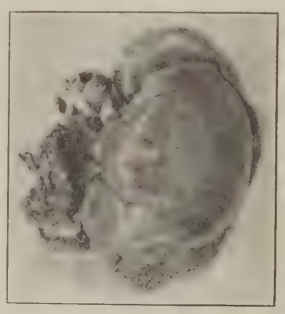

Fig. 5

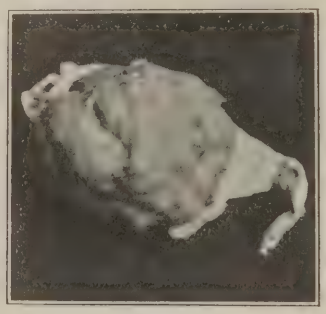

Fig. 6

Fig. 5.—Kidney showing three yellowish white nodules varying in size from .5 to 1 cm.
Fig. 6.—Nodule measuring 2.3 by 1.6 by 1.5 cm. attached to the dura in the posterior fossa on the right side.

Lungs.—The left lung was pale red with areas of a deep red mottling in the lower lobe. The pleural surface was smooth and dull in appearance, and there were a number of small nodules which could be felt throughout each lobe. On section it was of a pale reddish color mottled with small areas of a yellowish white color, which were firm in consistency and measured from one mm. to one cm. in diameter. The alveolar walls could be made out in a few areas and a small amount of frothy fluid could be squeezed from the terminal bronchi. The peribronchial lymph nodes were swollen and soft in consistency.

The upper lobe of the right lung was of a dark red color mottled with yellowish areas. It was firm in consistency throughout. The yellowish areas appeared as nodules of varying size from one mm. to 1.5 cm. There were a few tags of fibrin at the apex.

The lower and middle lobes were of a pale red color with the pleural surface dull, and with a few grayish white nodules on the surface, which varied in size from .5 cm. to .8 cm. On section the upper lobe was of a dark red color studded throughout with grayish white or yellowish firm nodules, irregular in out-

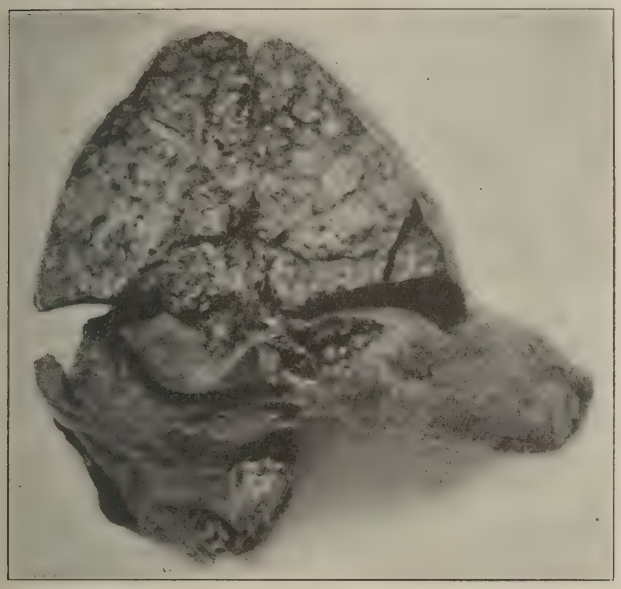

Fig. 4.—Lung showing caseous tuberculosis.

line. The alveolar walls could not be made out. The walls of the bronchi were thickened. There was no area which was air containing. The middle and lower lobes were of a pale pink color with the alveolar walls slightly visible in some areas, and they contained a number of nodules of a yellowish white color, which varied in size from one half to one cm. The peribronchial lymph nodes were enlarged and soft in consistency.

Spleen.—The spleen weighed thirty-five grams and measured six by four by two cm. It was of a pale reddish blue color studded with yellowish white nodules. The capsule was rough and the areas between these nodules of a pale bluish red color. It was firm in consistency. On section it was of a dark red color and the Malpighian bodies could be made out. There were a number of small, irregular, yellowish white nodules throughout, which varied in size from two mm. to six mm.

Stomach.—The muscular wall, submucosa and mucosa showed no gross pathological changes.

Duodenum.—The duodenum showed no gross pathological lesions.

Ileum.—In the ileum there were a few small grayish nodules in the mucosa, which varied in size from two mm. to six mm. The mucosa was smooth and distinctly made out.

Liver.—The liver weighed 200 grams and measures 12.5 by 8 by 4.7 cm. It was of a pale yellowish red color, and on the surface there were a few small grayish white nodules, which varied in size from one mm. to three mm. On section it was of a pale brownish yellow color. The liver lobules could be distinctly made out. There were a few small grayish white nodules scattered throughout the liver substance.

Gallbladder.—The mucosa was distinctly made out and there were no visible changes in the muscular wall.

Adrenals.—The adrenals on section showed, in the cortical portion, a small grayish white nodule, two mm. in diameter; the remaining portion of the cortex and medullary portions showed no changes.

Kidneys.—The right kidney weighed forty grams and measured 6.5 by 3.5 by 2.5 cm. The left kidney weighed ninety grams and measured 6 by 3 by 2.5 cm. The capsules stripped off with ease and left a pale smooth surface. The lobulations were distinct, and there were found on the surface of each kidney three yellowish white nodules, irregular in outline, varying in size from .5 to 1 cm. On section the cortex was found to be of normal thickness and the normal striations could be distinctly made out. The Malpighian pyramids could be seen. On the cut section, there were two yellowish white nodules, irregular in outline and appeared the same as those on the surface. The pelves and ureters showed no changes.

Pelvic organs.—On the serosa of the posterior wall of the bladder there was one small yellowish nodule. On section the mucosa was smooth and glistening throughout and showed no changes. The prostate showed no gross pathological changes. There were large yellowish gray nodules which occupied partly the testis and partly the vas deferens.

Neck organs.—The thymus was large and firm in consistency. On section it consisted of large nodules which were irregular in outline and occupied practically all of the thymic tissue. The lobulations could be made out. The centre of the nodule in the thymus was soft in consistency. The hylic lymph node on the right side, measuring 1.5 cm., was of

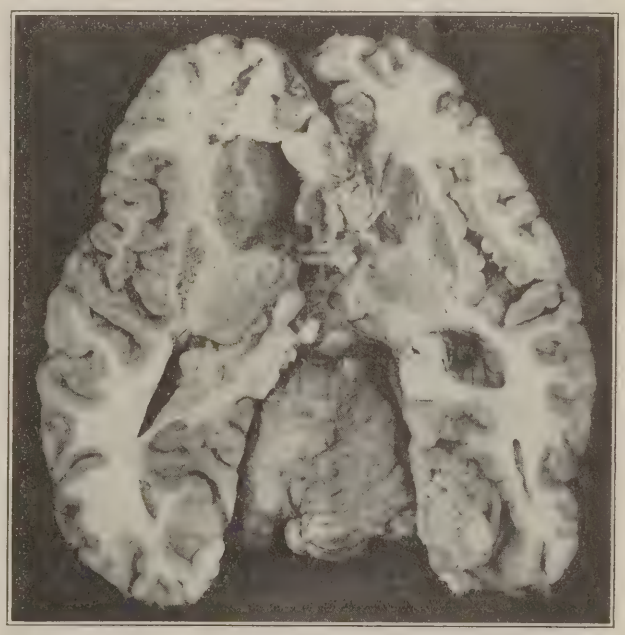

Fig. 7.—Brain.

a yellowish white color, and on section contained soft caseous material.

Head.—The mass at the external angular process of the frontal bone was adherent to the periosteum and measured three by four cm., and on section showed a wall composed of thick fibrous tissue, and

contained about four c. c. of a thick yellowish material. There were nodules on each lower temporal region of the parietal bone, which eroded through the bone and were of a distinct yellowish white color; the bone was soft and brittle.

Brain.—(I am indebted to Dr. C. L. Davis for the description of the brain.) There was an irregular grayish yellow nodule attached to the dura in the posterior fossa on the right side. It measured 2.3 by 1.6 by 1.5 cm. and pushed into the substance of the posterior pole of the occipital lobe on the right, and involved the occipital bone beneath it. The brain on section showed the following areas to be involved with soft yellow caseous tubercles. In a general way the infection had followed the course of the corpus callosum. The entire body of this structure was involved.

In the right hemisphere, on the right side the infection passed over the body of the lateral ventricle and the roof of the posterior horn, and reached the surface of the posterior limb of the postparietal gyrus. Ventrally it extended over the roof of the anterior horn, reaching the medial surface of the hemisphere at the gyrus rectus, two cm. from the frontal pole.

In the left hemisphere, the process extended dorsally over the roof of the posterior horn, reaching the medial surface of the occipital lobe in the region of the cuneus. Ventrally it passed forward over the body and anterior horn of the lateral ventricle and reached the superolateral surface near the frontal end of the middle frontal gyrus. A separate nodule about one and a half cm. in diameter was situated in the inferior postcentral gyrus. The septum pellucidum and the columns of the fornix were also involved.

Cerebellum.—A large area of the right lobe of the cerebellum was involved, extending from the surface of the anterior crescentric lobule close to the vermis of the lateral part of the inferior semilunar lobule.

Anatomical diagnosis.—Disseminated tuberculosis; caseous tuberculosis of lungs and mediastinal lymph nodes; tuberculosis of intestine and mesenteric lymph nodes; tuberculosis of ventricular wall—left, and middle segment of tricuspid valve; tuberculosis of liver, spleen, adrenals, kidneys, testis and thymus; tuberculosis of dura, brain and skull bones, ribs and vertebra.

Bones.—Femur, skull and rib; bone lacunæ very large and conglomerated. Canals all widened and many full of blood pigment. Skull a necrotic (caseous) mass, erosion of bone; bone cuts easily. There were no lime salts. Bone was fibrillar; it was very cellular in places—nuclei elongated oval. There was necrosis (caseation in areas). The fibrous structure was infiltrated densely with epithelioid and round cells. The hard bone structure was very porous, hemorrhagic. Haversian canals dilated and full of loose connective tissue with small round cells and epithelioid cells. Tubercle bacilli were seen in the granulations about caseous material.

Microscopical examination of tissues named above showed the presence of tubercles, a few of which contained giant cells.

I am indebted to Professor Hugh R. Spencer, director of the laboratory, for the privilege of reporting this case.

The author's references will appear in his reprints.

Vincent's Angina

JAMES H. HUTTON, M.D.,
Chicago

Vincent's angina is a term and condition long known to medical literature. It is not extensively described and from the literature one gets the impression that it is a rare condition and of little significance. My own experience leads me to believe that it is not a rare condition and the case herewith reported shows that it is not always a trivial affair by any means. The following is a review of dental and medical literature on the subject with the recital of a case of unusual severity. The treatment outlined is regarded as the best in the present state of our knowledge.

The term, Vincent's angina, was originally used to indicate the infection of the tonsils by Vincent's spirillum and fusiform bacillus whose symbiotic and anaerobic characteristics are well known, and was gradually extended to include the invasion of the tissues of the mouth, especially the gums. The dentists are said not to have been familiar with the condition prior to the epidemic which occurred during the World War. The Committee on Nomenclature of the National Dental Association proposed the term Vincent's angina when the infection was in the throat and Vincent's infection when the tissues of the mouth were involved. The organisms are easily demonstrated in smears from the diseased areas.

Bercher contends that the lowering of the resistance of the buccal mucous membrane is the chief and primary cause, and that the organisms play a secondary rôle. He suggests that such reduction of resistance may be brought about by the following three causes.

1. A general infection, such as diabetes or scurvy, or by lead, phosphorus or mercury.
2. The infection accompanying the eruption of wisdom teeth.
3. A trophic disorder of the mucosa due to chronic alveodental irritation.

He lays great stress on the latter and seems to feel that this is the most frequent underlying factor, the removal of which is necessary before a cure can be effected.

SYMPTOMS

Painful inflammation along the margin of the gingival tissue, especially between the teeth. This

is characterized by sudden onset and by the formation of a grayish slough which sometimes extends rapidly and at other times slowly. The speed seems to depend on the previous condition of the mouth or the general health of the patient. The slough can sometimes be removed by a swab or sharp instrument exposing a red hemorrhagic surface. In the absence of treatment this quickly breaks down and forms another slough. The bloodvessels are early involved resulting in hemorrhages, spontaneous and induced, which sometimes occur during sleep. Such are thought to be of definite diagnostic value.

The breath has a characteristic foul odor.

Constant drooling of saliva in more severe cases.

Sleeplessness.

Loss of appetite. The soreness of the mouth renders it almost impossible for the patient to take solid food.

Fever is not common even in severe cases though the pulse rate may be considerably increased.

When the infection extends to the throat the general symptoms are much like those present when the gums only are involved, except that they are more severe.

Tonsils badly swollen and very red.

No exudate.

Sloughs and ulcerations especially involving the periphery of the tonsil. Ulcer may involve entire circumference of tonsil.

Tongue often covered with a thick fur which in appearance and thickness resembles moss.

Tongue very painful and tender.

Mental depression a common and distressing accompaniment.

Lymph glands involved. They sometimes become the most painful points of attack, especially when tonsils are involved.

OCCURRENCE

Neglected mouths most common.

Cigarette smokers seem very susceptible.

Syphilitics said to be very susceptible, but its occurrence in no way inplies the presence of lues.

TREATMENT

Dental.—Lightly remove all necrotic débris. Apply ten per cent. neosalvarsan in glycerine daily; or aqueous solution of iodine, followed immediately by twenty per cent. solution of silver nitrate. This causes a precipitate of silver iodide to form on the tissues and so eliminates the irritating action of each drug. This may be repeated at intervals of two days but should not be continued over a long period of time. Sodium perborate one teaspoonful in one half glass of either very hot or tepid water; writers are not agreed on the temperature of the water. My own preference is for very hot water as I believe the heat helps to relieve the pain. Perhaps the patient's preference might be consulted on this point. An original one pound package should be purchased and the mouth wash so made up should be used every half hour in severe cases; less often in milder ones. This wash should be continued for two months after the symptoms have subsided. Scale teeth superficially. Stop the use of a tooth brush. Postpone all operative measures until a cure has been effected. Light diet and rest. Other measures mentioned but not so highly recommended now as formerly: Peroxide of hydrogen locally. Permanganate of potash made up in solution the color of pink blotting paper for use in syringe. Hold syringe a foot or so from mouth and use considerable force in the injection. This serves two purposes: first, to wash away pus and other necrotic material, and second, to stimulate the gums. The organisms are killed by the oxygen from the permanganate. Silver nitrate in two per cent. to four per cent. solution applied locally. Copper sulphate in one half of one per cent. to one per cent. solution applied from atomizer. Loeffler's solution locally. Trichloracetic acid full strength. Tincture of iodine seldom used now except as described above. Tricresol five per cent. in alcohol. Zinc permanganate one grain to the ounce. Formalin. At the present time astringents are thought to have little value and escharotics are mentioned only to be condemned.

Medical.—Local: Paterson recently recommended the following formula:

liquor arsenicalis	2 drachms.
vin. ipecac	2 drachms.
glycerine	2 drachms.
aq. menth. pip to	1 ounce.

General: Potassium chlorate eighteen grains daily. Antimony and potassium tartrate one per cent. solution made up in sterile freshly distilled water and 0.5 c.c. of this solution injected intravenously. In two or three days a second injection may be given increasing the dose to ten c.c. Usually six injections will effect a cure. Great care should be taken to see that none of the solution is spilled in the subcutaneous tissues. Such an accident will cause great pain and probably incapacitate the patient for several days. Injections should be made very slowly to prevent nausea and vomiting. If this should occur the patient should be kept on the table for a few minutes when it will subside.

Occasionally a reaction resembling anaphylaxis is said to occur presenting the following symptoms; Redness of the conjunctivæ; suffusion of the face; swelling of the eyes and lips; dyspnea; acceleration of the pulse rate; cyanosis at times; symptoms of shock later. The treatment for this reaction is said to be 0.5 c.c. adrenalin chloride, one to one thousand solution hypodermically. Further treatment should be given carefully and probably with reduced dose. Neosalvarsan is mentioned in the literature but its value is not emphasized by most writers. Kritchewski and Seguin believe that the organisms can be killed by the use of arsenobenzol and the cure accomplished in that way. This coincides exactly with my own opinion.

Bercher holds a slightly different view and his outline of treatment follows. I believe that most men disagree with him when it comes to the operative measures.

"1. If the stomatitis appears during the course of a general disease (diabetes, scurvy) or an intoxication (lead, mercury, phosphorus), the treatment will be that of the general infection supplemented by buccal antisepsis which comprises filling and cleaning the teeth followed by applications of methylene blue, bichromate of potassium, etc., alternating with glycerinated neosalvarsan.

2. In stomatitis following infection of the coronary mucosa due to the noneruption of a wisdom

tooth, local arsenical treatment is unquestionably the best (with or without surgical intervention according to clinical indications).

3. When the stomatitis occurs, because the buccal mucosa has lost its resistance under the influence of a trophic disorder due to alveodental irritation, the destruction of the irritative lesion can only assure the cure. Arsenobenzol can only be an accessory agent. The discovery of the primary source of irritation can always be made, although difficulties may be encountered. The investigation must be pursued in and around the wisdom teeth because the source of irritation will most frequently be found there.

The following conclusion can now be formulated: All stomatitis which resists a well conducted local and general antiseptic treatment should arouse the suspicion of trophic disorder and cause a systematic and minute search to be made for the irritative lesion, the removal of the irritation will suffice to effect a cure."

PROGNOSIS

Usually favorable though it may terminate fatally. The patient may become so worn out by the loss of sleep and improper and insufficient food as to fall an easy prey to some intercurrent infection. The earlier treatment is begun and the more intensively it is carried on the better the prognosis. Relapses are more difficult to heal than the original lesion.

REPORT OF CASE

Case.—Mr. R., aged thirty-eight, was first seen for the present trouble on November 20, 1922. He said that he had had a sore mouth since October 20th. The day before consultation the trouble had extended to the tonsils and tongue. The extension caused enough pain and malaise to incapacitate him. The tonsils were red and swollen but not covered with any exudate. The sore mouth was confined to the right half of the upper jaw. The gums were covered, in places, with grayish slough. There was a line of inflammation along the margin of the gums on both surfaces. There were one or two ulcers on the mucosa of the cheek. The cervical lymph nodes were enlarged and tender. Smears showed large numbers of Vincent's organisms. The next day, November 21st, he was given neosalvarsan 0.3 gram; on November 22d and 23d each, he was given neosalvarsan 0.6 gram; the following day, November 24th, he considered himself cured and went to business.

On December 9th he came to the office saying that his mouth had been a little sore for a few days and the lesions around the gums looked about as they did when I first saw him. The tonsils were not involved. Smears again showed large numbers of Vincent's organisms. He was given neosalvarsan 0.6 gram on that day and on December 11th, 15th, 18th, and 20th, each, he was given 0.9 gram. His improvement was such that he again considered himself cured and discontinued treatment. From October 20th to November 20th he was under the care of a capable dentist, Dr. J. D. Johnston, whose treatment consisted of an antiseptic mouth wash, argyrol ten per cent. to the inflamed areas and of scaling of the teeth. From November 20th to December 27th Dr. Johnston did not see him.

During the period from December 9th to December 20th the ultraviolet ray was used on the throat and mouth. Applications were made every day or every second day. So far as could be determined this treatment exerted no favorable influence on the course of the disease. Looking back at it, I feel sure that more could have been accomplished by a different technic. I believe that this ray is a valuable agent in the treatment of this form of infection. I am told, but cannot verify it, that the ultraviolet ray has been used considerably in the Government hospitals in the treatment of this condition.

December 27th, I was called to the home and found the condition very much as I had seen it on November 20th. Neosalvarsan was again started; 0.9 gram was given December 27th, 30th and January 3d, 8th, 12th, 14th, 16th, and 18th. During this period he was also given neosalvarsan 0.9 gram in one ounce of glycerine for local application. The lesions did not respond to treatment and extended to the rest of the mouth and throat. His general condition became worse. Insomnia became very troublesome and the pain so severe as to require morphine. There was constant drooling of saliva and he was unable to eat much because of pain and difficulty in swallowing. Dr. Johnston went to the house twice a day to give local treatments. These, for a time, were neosalvarsan in glycerine, later peroxide of hydrogen followed by ten per cent. argyrol to the gums.

January 18th Dr. William Engelbach saw him in consultation. He agreed with the diagnosis but advised against the further use of arsenic fearing that a neuritis would develop and still further cripple the patient. January 19th, 22d and 23d he was given sodium iodide intravenously in doses of two grams. The condition remained unchanged or perhaps grew worse. He began to complain of numbness and itching of the palms and soles. Later these areas became covered with a red macular eruption, the lesions being about four by six mm. in size.

On January 24th it was decided to renew the neosalvarsan so 0.9 gram was given on that day. It was then suggested that arsphenamine might be more efficacious. On January 30th, 31st, February 2nd, 6th, and 8th he was given arsphenamine 0.6 gram. The only change was the production of a very painful and troublesome phlebitis in the right arm. From January 3rd to 18th he was given emetine hypodermically daily.

During all of this time the urine remained normal, neither albumin nor casts appearing. The blood also showed no sign of degeneration. His condition was growing a little more precarious. He could eat very little and could not sleep for any length of time. Morphine had to be given every night. The feet and hands were becoming more painful.

It was felt that since the arsenicals had been the only measure that had afforded relief perhaps the organisms had acquired a tolerance for the usual dose and that this might account for the lack of improvement during the last installment of the disease. The only sign of involvement of the nervous system was the condition of the hands and feet; so on February 12th it was decided to risk the production of a more severe neuritis and administer larger doses. On that morning he was given two tubes of 0.6

gram each of neoarsphenamine. These were given in twenty c.c. of water in a twenty c.c syringe. The result was almost magical. There was some improvement within four hours. Within twelve hours the pain had almost entirely disappeared. He slept well that night and ate a good breakfast the following morning. Within four days the lesions in the mouth had entirely healed. No more arsenic was ever given.

The condition of the palms and soles did not materially change. No treatment we could advise had any effect on this. He finally changed climate, going to a warmer one where hydrotherapy was given. This brought a very prompt change for the better. He has been back at work now for some time and is in pretty good health, although, at this date, August 11th, he still complains if he has to be on his feet for a great while.

The interesting features of this case were: The promptness with which neoarsphenamine effected an apparent cure early in the disease. Its complete failure to bring relief, later, when used over a long period of time in the ordinary dose. Finally, the very prompt subsidence of the disease following the administration of a single massive dose. My personal belief is that arsphenamine or neoarsphenamine is a specific for this condition. Given early and intensively it will cure practically every case. If the case does not respond to treatment the size of the dose should be increased. During the entire illness the doctor and dentist should work in conjunction.

The author's references will appear in his reprints.

Bronchial Asthma*

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By the term asthma, I mean that condition produced by spasm of the involuntary muscles of the bronchioles, associated with swelling of its mucous membrane, with or without increased secretion of mucus, manifested mainly by expiratory and to a lesser degree by inspiratory dyspnea, which is intermittent and usually associated with paroxysms of coughing.

To my mind the term asthma (Greek for panting) is bad, for it is only a local manifestation of a general allergy, producing on account of its anatomical location a certain train of symptoms. The same allergic state manifests itself in other forms, such as rashes, particularly urticaria, angioneurotic edema, hay fever, mucous colitis, migraine, the digestive hemoclasis of Widal, etc. While it is true that these various manifestations of allergy give rise to entirely different trains of symptoms, it is equally true that arteriosclerosis gives rise to entirely different trains of symptoms, depending upon which tissue or organ is involved. The symptoms arising from arteriosclerosis of the abdominal viscera are entirely different from the symptoms arising from sclerosis of the cerebral bloodvessels. Yet we speak of general arteriosclerosis as the underlying disease. The symptoms arising from syphilis of the nose are entirely different from syphilis of the lung, yet we speak of syphilis as the underlying disease.

Patients with bronchial asthma frequently suffer also at the same time from the other forms of allergy mentioned above.

There is only one interpretation to such a condition, and that is, that the patient is suffering from the various phases of one disease and not a half a dozen diseases at the same time. This is illustrated by the following case.

CASE I.—A thirty year old woman complained that for many years, after eating certain foods, her face became swollen, but she had no difficulty in swallowing. Hives broke out all over the body, especially back of the knees, and this lasted from one to five days. At times she was nauseated and had an intense aversion for certain foods, especially eggs and sweets. Although as a rule she was constipated at times she had severe attacks of diarrhea. There was intense itching at the inner canthus of the eye, she caught cold continuously and had a running nose. Lately she had been having attacks of dyspnea and a dry spasmodic cough which lasted for an hour. These attacks came both summer and winter and were worse at night. She was nervous, irritable, and excited at times and suffered from severe frontal headache. Her menstruation formerly lasted five days, but now only two, and was very scanty. There was no relation between menstruation and the attacks described above. She was fifteen pounds overweight. Had areas of angioneurotic edema, especially over the face, and hives over the extremities; conjunctivitis, clogged nose, red hypertrophied tonsils, and slightly enlarged thyroid. Cutaneous allergic tests showed her very strongly positive to coffee, onion, beef, and meat, less so to chicken, cucumbers, and bananas, and slightly to grapefruit and cheese.

Diagnosis was as follows: 1. Allergy of the respiratory tract, producing attacks of hay fever and asthma. 2. Allergy of the gastrointestinal tract, giving rise to attacks of diarrhea. 3. Allergy of the skin, giving rise to urticaria and angioneurotic edema.

COMMENT.

Patient presented herself suffering at the same time from the various forms of allergy. Patients will present themselves one year with one form of allergy, say allergy of the skin, hives, itching, angioneurotic edema, and the next year they will present themselves with an entirely different form, as allergy of the respiratory tract—asthma. I believe that a

*Read in part, by invitation, before the New York Clinical Society.

more comprehensive nomenclature would be to call the underlying disease allergy and designate the different forms by the organs or tissue involved, such as allergy of the upper respiratory tract for hay fever, allergy of the respiratory tract for asthma, allergy of the skin, colon, etc.

The term anaphylaxis is quite frequently applied to bronchial asthma. The difference between anaphylaxis and allergy is that the latter occurs only in specially predisposed individuals, exhibiting particular hereditary traits, whereas anaphylaxis is a reaction common to all animal species and can always be provoked in any animal, including man, by parenteral injection of some protein. Furthermore, all attempts to produce a state of antianaphylaxis, which will last for any length of time, in animals previously sensitized, have so far failed, whereas we can obtain in over eighty per cent. of our specific asthma cases a period of desensitization lasting for some time.

The vegetative nervous system plays the leading rôle in bronchial asthma (1). An unstable (2) vegetative nervous system characterizes the asthmatic individual and makes bronchial asthma an inherited disease. While you must have some substance, either endogenous or exogenous which acts in a poisonous manner, in order to produce the clinical manifestations of asthma, we must remember that the contraction of the unstriped muscles of the bronchioles, the dilatation of the bloodvessels, which causes a swelling of its mucous membrane, and the increase of its thick secretion—the mechanism responsible for bronchial asthma can be produced only through the vegetative nervous system. An attack of asthma precludes an irritability of the vagus or a hypervagotonia. It is during the stage of hypervagotonia that the individual is especially susceptible to intoxication, producing the various allergic reactions. The intoxication then provoked is particularly prompt and severe, while during the stage of hypovagotonia or sympathicotonia the individual is relatively sensitive to intoxication and reaction to the very same substances. This represents the quiescent interval between the attacks. If attacks should be produced they are usually mild and delayed. The reasons why an asthmatic, after an attack, is free for a variable length of time from another attack of asthma, is because he becomes a hypovagotonic.

This conception explains the cyclic character or intermittency of bronchial asthma. It also explains why the very same substance can at one time produce a severe attack of asthma and at another time a very mild or even no attack; the intoxication depends upon the degree of hypervagotonia. It also explains not only why the patient who is susceptible to a given protein may at one time give a positive cutaneous test and at another time a negative test to the very same protein, but also why the cutaneous test may be very marked and prompt in its appearance at one time and at another time slight and delayed. It all depends upon whether the patient is at that time in a state of hypervagotonia, and if so, to what extent. It behooves us, therefore, in performing cutaneous allergic tests to make them shortly prior to or during an attack of asthma (3). The termination of an attack of asthma occurs as the hypervagotonic stage is gradually transferred to the hypovagotonic or the sympathicotonic. A sympathicotonic state terminates an attack of asthma promptly and definitely. This explains the usefulness of atropine in asthma, which, by paralyzing the vagal endings, produces a state of hypovagotonia. Adrenalin acts by stimulating the sympathetic and thus produces a state of sympathicotonia.

It is well known that the endocrines are closely related to the vegetative nervous system. In some cases of asthma the endocrines show definite involvement, and undoubtedly bear a close relationship to asthma.

Case I.—G. S., a six year old child, weighing forty-six and a half pounds, for the past three years had complained of choking, wheezing, dyspnea, and coughing, and at end of an attack would bring up thick yellow phlegm. These attacks came on once in three or four weeks, more often at night, lasted about three days, and were not influenced by season, climate, emanations and geographical location. She vomited after eating milk and eggs, which, however, did not always bring on an attack of asthma and were worse in cold weather. She also vomited during an attack and at the end of a coughing spell. Her nose was always clogged. Her father had coughing spells. She had had pneumonia and pertussis which lasted four months. She presented Hutchinson teeth, and no left central incisor. Had large axillary glands, wheezing, expiratory and inspiratory dyspnea and her lungs were full of all kinds of râles. A striking feature of the case was that the child presented a decided mustache over the upper lip. All laboratory examinations were negative. Cutaneous tests were positive only to egg white and egg yolk. A diagnosis of bronchial asthma was made, with endocrine disturbance—gonadopituotrope.

The child who had marked bronchial asthma, showed distinct endocrine disturbance—ovarian—as evidenced by the presence of a decided moustache. It is hard to tell definitely what relationship this bore to the asthma. It is significant that the child had pneumonia and pertussis which lasted for four months, establishing perhaps an infectious factor as a causal agent. While the child vomited after milk and eggs, the cutaneous tests were positive only to eggs. She did not always get an attack after eating eggs, and felt worse on cold days.

The manner of action of the endocrines, however, lies in the realm of theory and speculation. What we want is experimental proof in this direction and so far none has been forthcoming. If one will attempt to cure or even relieve asthma by endocrine therapy he will meet with disappointment. I state this as the result of actual trial in a large number of cases. Now and then, only, one meets an exception to this general rule as illustrated by the following case.

Case III.—B. C., a boy of twelve, weighing 125½ pounds, complained all last year of severe, more or less continuous, frontal headaches, and was nauseated and vomited frequently. He caught cold frequently and his nose was clogged. Had attacks of dyspnea, wheezing, tightness over chest, choking sensation,

and cough, and at the end of an attack would expectorate a viscid mucus. These attacks were not influenced by weather, season, location, time of night or day, food, or cold. He was sleepy most of the time and perspired a great deal. Tonsillectomy and adenoidectomy had been performed, and he had had operations on his nose from which turbinates had been removed. The mother and father both suffered from severe attacks of migraine.

The patient was a big boy, fifty pounds overweight, had a small head, left canine entirely different shaped from the right; he had flat feet but was otherwise negative.

X ray examination showed a small sella turcica, even when the small size of the head was taken into consideration, but no other evidence of pathology. One of the best nose specialists found an acute bilateral sphenoidal and left frontal sinusitis and insufficient drainage due to an old deformity of the nose which required more operations. All laboratory examinations, including the cutaneous allergic test, were negative. Diagnosis: 1, asthma; 2, migraine; 3, dyspituitarism; 4, sinusitis.

The boy was given at first two grains of pituitary extract three times a day, and then one grain, and the asthma, headache and nose condition cleared up entirely without operation. One year later the boy was free from all symptoms and had lost twenty pounds in weight. He was still taking one grain of pituitary extract three times a day.

As the boy improved promptly under pituitary extract, I believe it is safe to infer that the asthma was closely associated with the endocrines. It is interesting to note that with the disappearance of the asthma, all indications for nasal operations disappeared.

In certain female patients attacks of asthma are likely to occur around or during the menstrual period. This can be explained by the state of hypervagotonia, which exists at that time. Of course the hypervagotonia undoubtedly, at that time, does have an endocrine basis. One has a right to expect good results from the use of the endocrines in this group of cases, but so far the results have been exceedingly disappointing.

The intoxicating or allergic substance may be endogenous, or exogenous in character (4). Allergic substances of endogenous origin are usually bacterial in nature. These may come from the infections of the upper respiratory tract, rhinitis, sinusitis, pharyngitis, bronchitis, tonsillitis, abscessed teeth, unresolved pneumonia, infections of the genitourinary tract, and diseased appendix and gallbladder. In my experience, the rôle played by pulmonary tuberculosis in bronchial asthma is not more important than in other diseases. Yet I have seen asthma in both the incipient and the advanced stages of pulmonary tuberculosis. I have seen a good many cases in which the first attack of asthma dated from an attack following pandemic influenza.

In my experience with this infectious class of cases the mere removal of the focus of infection does not cure the asthma. In only a very few are the patients benefitted, and that for a very short time only. Sooner or later even in these few there will be a recurrence of the asthma. On the other hand, these patients are particularly benefitted if after the removal of infected foci, vaccine therapy is employed.

Rarely does an asthmatic of several years' standing enter the office but one or more operations have been done on nose and throat. I know of no anatomical portion of the body that is operated upon so much as the nose. But the limit of operations is reached when you come to consider the nose in asthmatics. All the theories about reflex neurosis and septic drainage and intoxication may be all right; but the results are not there. My warning to nose and throat specialists is to leave the nose and throat of asthmatics alone. An effort to cure true cases of bronchial asthma after any kind of operation on the nose and throat is sure to end in failure. If specialists will review their socalled cured asthma cases after operations, they will find that they have not been dealing with cases of bronchial asthma, but with other conditions producing clogging of the nose and dyspnea. Not every case of dyspnea is bronchial asthma. By this I do not mean to say that bronchial asthma is a contraindication for operation on the nose and throat. Not by any means. But do not make asthma an indication for operation. You will also be surprised to see how socalled normal indications for nose and throat operations will vanish when the patient is cured of asthma by other means. R. A. Gutmann reports (5) a group of cases of chronic appendicitis, in which pressure over McBurney's point invariably brought on an attack of asthma. He explained that this was brought about reflexly through the vegetative nervous system. He removed the appendix in these cases and cured the asthma.

Since writing this article I have been particular to exert pressure over McBurney's point in all asthmatics and have had no difficulty in eliciting pain and tenderness. This fact, together with the digestive disturbances from which all asthmatics suffer, would make a diagnosis of chronic appendicitis very easy, were I surgically inclined. However, I had the greatest difficulty, by pressing over McBurney's point, in provoking an attack of asthma. No patient has so far developed it. It is surprising to see how many asthmatics are operated upon for appendicitis. I believe that most of them are suffering from the intestinal form of allergy.

CONCLUSIONS

1. The term bronchial asthma should be substituted by the term allergy of the respiratory tract.
2. Patients will present themselves suffering from the various forms of allergy; such patients suffer from one disease and not from several diseases.
3. Allergy differs from anaphylaxis.
4. The vegetative nervous system is unstable in asthmatics.
5. Hypervagotonia plus the intoxicating substance is what precipitates an attack of asthma.
6. Cutaneous tests should preferably be made prior or during an attack of asthma.
7. Explanation of action of atropin and adrenalin which are useful in asthma.
8. Endocrines play an important rôle in asthma.

9. As a rule endocrine therapy is a failure.

10. Infections are exciting factors in some asthmatic attacks.

11. Autogenous vaccines are very useful.

12. Most of the operations on the nose and throat for the relief and cure of asthma are a failure. Cure the asthma by other means and the indication for operation vanishes.

13. In diagnosing appendicitis, care must be taken to rule out the gastrointestinal form of allergy.

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What Is a Good Surgical Result from a Legal Point of View?*

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There may at times be an honest difference of opinion as to what constitutes a good operative result from a surgical point of view, and many additional features must be considered when the matter is discussed from a legal viewpoint. There is no fixed standard with which we may compare a particular result in order to settle the question. There is no one rule by which we may hope to arrive at a definite conclusion. Both discussion and recourse to the courts would be unnecessary if such a rule existed. It will be understood, therefore, that in selecting this question for consideration, I have no thought of being able to make any hard and fast ruling in the matter. It is obvious that I am incompetent to draw conclusions from a legal viewpoint, and I desire merely to point out a number of factors which must of necessity enter into each decision.

Strange as it may seem, the same legal standards in regard to surgical results do not obtain universally. In a number of instances, the courts have decided that a patient is entitled only to that grade of service which is standard in the community in which he and the doctor live. A patient living on a ranch, sixty miles from the nearest physician, cannot expect to have the same treatment that would be given in ordinary routine to any ward patient in a city hospital. The man living on the ranch might obtain as good a result as the man treated in the hospital, but this would not be so in all cases. For instance, the x ray is one of the surgeon's most valuable aids in the present day treatment of fractures. The patient on the ranch would be deprived of the benefit of x ray examination, without which he might have decreased function, malposition or both. Nevertheless I sometimes wonder whether we attach too much importance to it. It is quite possible that our skill and ability would develop to a much greater degree in the treatment of fractures by manipulation and dexterous splinting if we did not have the x rays for diagnosis or confirmation.

It is the surgeon's duty to give personal, painstaking and conscientious care to all fractures. Fractures were treated for many years before the discovery of x rays. They were very well treated, indeed, and, except in a small percentage of cases, the average fracture healed as well then as it does now. It has never been necessary for the surgeon to know that the bone fragments were in perfect apposition, or that the bone was just as straight as it had been before the break, in order to produce a good result. The surgeon of the days before the x rays knew that the point of fracture was not always in anatomical alignment, but he worked unceasingly to obtain function. That was the criterion. If a man had function, he had a satisfactory result. Anatomical accuracy, while desirable, has never been indispensable.

There is also a possibility that x ray examinations may lead to meddlesome surgery. A patient with fair contour and good function should not be subjected to the dangers that might follow an operation for the improvement of deformity. I remember very well an elderly man who had compound multiple fractures of both bones of the forearm. This man (at that time sixty years of age) had such a good functional result that he went back to his work as a beamer for one of the largest leather companies in Philadelphia. This happened in the early days of the x rays, so I had a skiagram made. The plate showed a dreadful "ram's horn" of bone which I would not have dared to exhibit to any patient, and without telling him a deliberate lie, I did everything that I could think of in order to prevent his seeing the plate, and finally destroyed it. Yet the contour of this man's arm was good, and function was perfect.

If I had believed that it was my duty to try to improve the alignment of the bones in this man's arm, and had operated upon him, it would be a good example of the meddlesome surgery that I mentioned previously. From a legal point of view, one look at the x ray plate would have convinced a litigiously minded attorney that the patient had been badly treated, in that he no longer had two straight bones. The attorney would have been mistaken in his opinion. Given function and fair contour, the anatomical picture of the bones is unimportant.

The fractures that most often lead to lawsuits are those of the femur, of the elbow, Pott's fracture, and that most common of all, Colles's fracture. A searching investigation in regard to the end results of fractures of the femur, made a number of years

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ago, with thousands of answers, was productive of the opinion that a shortening of not more than one inch was a good result and would be so decreed in court. Personally, I do not consider that a shortening of one inch in the average fractured femur constitutes a good result. I do not believe that a surgeon should be satisfied with any shortening that could be obviated by skillful treatment. The other extreme is illustrated by a friend of mine, whose fractured femur I was treating, who told me that he would not accept any result other than perfect end to end contact of his fracture.

There are certain fractures of the shaft of the femur in which we cannot obtain perfect alignment by any external method of manipulation known to surgery, even when the fracture is transverse. Perfect apposition of the fracture line in spiral fractures of the femur, by manipulation and extension alone, is, I believe, rarely possible. A fair proportion of fractured femurs, therefore, must be treated by some means of internal fixation. This introduces complicating conditions. In the first place, no man can operate upon any very large number of even simple fractures without having a death at some time—a death probably due directly to operation. I have never seen such an unfortunate occurrence, but I am willing to admit its possibility. Furthermore, internal fixation may be followed by nonunion, just as treatment by extension alone is followed occasionally by nonunion.

Various methods of treatment may produce vastly different results, and the cooperation of the patient is of enormous importance. If the patient were a definite factor, discussion would be without reason, but he always remains an unknown quantity. The most able surgeon, the most careful physician, may find his operation of negative value, his skill useless, because of a latent condition of disease in the patient and his failure to respond to treatment; or possibly he might act as one did recently for a friend of mine—get out of bed after an operation for the repair of fourteen perforations of the small bowel, eat some crackers, an apple, part of a banana, and then fill himself with water. This patient had an uneventful recovery, and perhaps bananas, apples, crackers and large quantities of water are the proper treatment for gunshot wounds of the intestine, although I doubt it. I believe that our legal friends would have held the surgeon blameless, had disaster overtaken the patient.

Treatment by different physicians may not be productive of the same result. Dr. X served an internship, engaged in general practice for several years, and then gradually specialized in surgery. He is, we will say, one of the surgeons to a hospital in a great city. Dr. X is marvellously skillful and operates with celerity and safety. If, perchance, he happens to cut the intestine, his demeanor is unchanged. The onlookers admire the skill with which he repairs the hole in the bowel and the operation proceeds. Is this man criticized? Not very much. Is he sued by the patient, even if it is discovered? Very seldom. Why? Because this man, with his training, his experience and his connections, would be able to go into the courts and practically set himself and his work as standard.

On the other hand, Dr. Y lives in a small town. A large general practice keeps him constantly engaged. He is one of a number of men who makes use of a local hospital which is open to all practitioners. Y has never had any special surgical training. He may never have been an intern in a hospital. It is true that he has been to Mecca, where he saw a large number of operations performed by a group of highly trained surgeons, with the result that he comes back to his community fired with a desire to do surgery. Another reason for this wish is that he may retain his hold on his own patients. Previously he has referred his surgical cases to his colleague, who is also in general practice, but who has had more surgical experience, and sometimes the patients have been retained. And so Y begins to operate. He is successful with the easy cases. He reads when he has time, and he reads somewhere a pernicious teaching—an operation reported by Dr. X. Y finds what he thinks is a similar condition and does that operation upon four patients, three of whom die. Dr. X does not do this operation in the type of case in which Y used it, but Y does not know this, and he is absolutely ignorant of the fact that his judgment was at fault.

If the relatives of these patients chose to sue Y for malpractice, he might not only have to pay damages, but he would also suffer a loss in standing and reputation, inasmuch as expert testimony would disclose the fact that an absolutely nonoperative procedure was the treatment indicated. Yet Y seldom suffers for his ignorance. His colleagues do not criticize him, because their own standards are not high, and they do not expect any wonderful exhibition of skill from their associate. Some men simply cannot realize their limitations. I shall never forget the occasion on which a friend of mine, no longer living, showed a child upon whom he had operated, and called attention to the splendid healing. Those present wisely nodded their acquiescence. As a matter of fact, every stitch hole was infected, and the wound itself had to be opened on the following day. It is impossible to tell whether or not this man realized his ignorance, but I do know that he made no further report concerning the child.

Nothing is ever gained by concealing disasters. It is only by a close and careful study of them, and of their underlying causes, that anything like perfection is achieved. Ignorance must be acknowledged before there is hope for improvement.

A proper understanding between the patient and the surgeon previous to operation places the surgeon in an unassailable position. It is not wise to be too optimistic. The patient may be told that he should be entirely relieved of his condition by operation, but he must understand that there is a certain amount of danger in any operative procedure. The possibility of a return of his malady should be discussed. As an illustration of this statement, authorities agree that in at least ten per cent. of patients operated upon for direct inguinal hernia a recurrence will develop.

The surgeon is, after all, merely human, more or less trained, and more or less skillful. Accidents occur even in the science of engineering, perfect as it is in the present day, axles and connecting rods break, starting gears go wrong and boilers blow up, and if machinery manifests these flaws, the human

economy is even more prone to do so, because of unsuspected pathology or errors in judgment.

If we had some standard by which a surgical result could be determined, the legal aspect would be plain. There is none at the present time, but the lines are being drawn more closely. The American College of Surgeons is beginning to judge of a man's fitness for surgery, and in a few years I believe that operations will be performed only by those men who have proved their ability before this association, and whose work is done in a manner satisfactory to it and for the patient's best good. It is true that operations of a minor type can and should be handled by a competent general practitioner, but such a man does not have sufficient leisure time to study and read as he should in order to keep abreast of current surgical progress. No man can be a universal specialist. It is impossible both to practice medicine well and do surgery as it should be done.

As you see, there is no one method by which a good surgical result from a legal point of view may be determined. A number of factors must enter into each decision. 1. Inasmuch as there is no one standard that we are compelled to attain, we must consider the standard that is in force in each patient's environment. 2. As long as we demand no special requirements of men who do surgery, we must consider whether or not they did the best work of which they were capable. 3. We must remember that patients vary, both in mental and body function, and while one patient may have a successful result, another may be either unimproved or may be unable to survive operation, owing to a complicating, heretofore latent malady, or the inability to withstand the shock to the nervous system.

There will be other points to consider in addition to those I have mentioned, for each individual patient will present his own problem. I believe, however, that the question has been discussed sufficiently. The thought that I wish to convey is that there is no one particular factor that is of supreme importance in making a legal decision on a surgical result. A broad outlook, an impartial mind and a tolerant attitude are the requisites for a just legal determination in each case.

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Uncommon Commonsense in Medicine

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Victor Hugo is responsible, I believe, for saying this in regard to many people and things in ordinary life. At least, so a friend writes me and his suggestion makes me apply it, in a small measure, to what I have seen in the practice of medicine.

The great value of commonsense in medicine is unquestionable and I shall try to illustrate it with a few examples. I have taken care of many patients of all sorts: rich, poor, ignorant, cultivated. The best, sanest patients were usually lawyers. As a rule, they selected their doctor with good judgment. Before selecting him they found out his experience, his standing with his peers, his character, his kindliness. Then, if ill, they confided in the physician selected, did as he advised, and when health returned were grateful in thought and deed for services rendered. They paid their bills promptly and often wrote an appreciative note with cheque enclosed. Business men, clergymen, women, frequently make a poor choice in their attending physician. They select him because friends say he is their doctor, or because he is young and, probably, with the latest and best knowledge, or simply because he has good manners and is attractive in person.

Again, many persons will take the newest drug with faith, when they would ignore, or throw aside, innocent and most reliable remedies, which have long been known and much used. Further, many patients will not take any medicine, or follow any timely, sound advice, unless the former is palatable and easy to take and the latter only when they are too ill to contest the matter. Further still, many people, even sensible men and women in other respects, make their own diagnosis of disease at first and take what they think best, or what an acquaintance, or the druggist counsels. At present, the rage is for the specialist, as soon as the disease is at all marked in any way, or because they think he knows more than the family physician. Hence it is that a doctor, or a surgeon, is no longer sufficient to take care of patients, but there must be an eye doctor, or a skin doctor, or someone who is a specialist for bones, teeth, throat, x ray, laboratory research, etc.

As to food and drink. The latter, thanks, perhaps, to Volstead, does now much less of the harm among well to do people. But they eat ill advisedly and far too much. Even when ill, they often want food that had much better be left alone. When the doctor tries to find out just what they do, he will often discover that they eat rich dishes with sauces, much sugar, and drink not a little tea and coffee. Of course, they often finally ruin their stomachs and teeth. When advised against much of all this bad doing, they simply answer they always have done it and many others do it.

I might go on in this way for many pages but I prefer to stop with a few additional remarks. If people, usually, would only use their commonsense in medicine, as they do about their money, there would be far less illness, and precautions of a rational kind to guard precious health would be followed. It is relatively simple to avoid disease; it is very difficult to regain health when once it is lost. And when long habits of bad living in a health way have been followed, it takes much time and some sacrifices to regain it, and that blessed result can come only in this way. If the physician were selected, as wise men and women should select him, the world would be far happier and healthier.

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Sinusitis*

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The term may seem somewhat ambiguous but the condition is becoming so prevalent that one immediately thinks of an inflammatory affection of one or more of the nasal accessory sinuses without further determinative. These sinuses normally contain air and some secretion from the mucous membrane lining, in contradistinction to the lateral or sigmoid sinus normally blood filled, or the surgical sinus, a fistulous tract. The lining of the nasal accessory sinuses is continuous and practically the same in structure as that found in the nasal chambers, with the exception of the membrane in the antrum of Highmore, or maxillary sinus, which is ciliated. It is evident then that the lining membrane of the accessory sinuses is subject to the same diseases as the mucosa of the nose, as there is normally an interchange of air between the nasal cavities and the sinuses. It must also be borne in mind that secretions from the sinuses pass into the nasal chambers, and that under certain circumstances the reverse occurs. The accessory sinuses, however, are much better germinating places than the nasal chambers, as they offer the four most important factors for microbic growth, namely, heat, moisture, darkness and medium. Aside from trauma, neoplasms of the sinuses, the specific infections, and uncommon inflammatory conditions of the nasal mucosa, the almost daily treatment of intranasal diseases by the general practitioner is more particularly concerned with the catarrhal or suppurative forms of sinusitis.

The stages of inflammation in the lining membrane of an accessory sinus are the same as in a mucous membrane anywhere else in the human body. The simple acute catarrhal form may pass away without leaving any appreciable traces, but repeated attacks will sooner or later lead to the chronic form in which there is, first, a persistent swollen condition of the membrane, sometimes termed hypertrophy, to be followed by the formation of fibrous tissue and an ensuing shrinkage or atrophy. The acute suppurative form may arise as such and be cured, but leave a certain amount of pathological change to be followed by other acute attacks, or slowly pass into the chronic suppurative form with positive changes in the membrane.

The acute catarrhal form of sinusitis is the most common and the type most frequently overlooked, for the reason that the average individual makes his own diagnosis of a "cold in the head," and after a varying period of selftreatment he seeks medical advice. The inflammation is now undoubtedly in its terminal stage and responds quickly to treatment. With the onset of the next attack selftreatment is again instituted as before, except that the medical treatment outlined previously for the terminal stage is now used in the first or second stages. This is manifestly not only illogical, but is decidedly detrimental, in that it prolongs the stages preceding the terminal stage which is also prolonged unnecessarily. This series of events often repeated leads into the more intractable chronic catarrhal state, if perchance it does not suddenly go into the acute suppurative form of inflammation. Therefore, when called upon to treat the condition termed a cold in the head, a searching examination should first be made to determine if one is dealing with a simple ordinary rhinitis, or an acute catarrhal sinusitis.

The history is important. If the patient is interrogated regarding the amount of discharge from the nose during a day, the answer will usually be that a large number of handkerchiefs are required or that it is almost impossible to eliminate the constant use of a handkerchief. The statement that it is almost impossible to be free from a cold; that about as soon as one cold is cleared up another supervenes, is also significant. These statements are two of the most important diagnostic criteria. Treatment should not be instituted at this time, but a rhinological examination as complete as possible should be made, and if, as is surmised, the membranes are swollen and bathed in secretion, an astringent solution, such as one of the suprarenal extracts, should be applied either by means of the atomizer or pledgets of cotton applied locally. It may require several applications to shrink the membranes thoroughly and they should be shrunken throughout the entire length of both meatus anteroposteriorly, when this has been accomplished, a warm mild alkaline douche should be employed to remove all the secretion contained in the nasal chambers. Great care must be exercised not to use undue force or pressure to accomplish this for fear of forcing the infected material into other cavities or spaces. This is most important. After having thoroughly cleansed the nasal chambers, the patient is allowed to remain quietly in the sitting position for a few minutes, the head being tilted slightly forward and downward.

Upon reinspection of the nasal fossæ, if a simple acute rhinitis is present no appreciable amount of discharge should be discernible, but if the catarrhal form of sinusitis is present a streak of discharge, either serous or mucoid in character, will be seen on one or both lateral walls, particularly in the region of the anterior tip of the middle turbinate. If this discharge is gently swabbed away, more discharge will shortly reappear in the same location. This indicates an involvement of one or more sinuses of the anterior series. Discharge appearing and reappearing in the neighborhood of the posterior tips of the middle and inferior turbinates would be associated with sinuses of the posterior series. In cases of acute or chronic suppuration, the detection of discharge is rendered easier by the whitish or creamy appearance of the pus.

Strange as it may seem, inspection of the throat is important, for there will be found striking evidence of sinus involvement. In many patients suffering from sinusitis there is to be found intranasally some irregularity or actual deviation of the nasal septum which precludes the proper drainage

*Read before the Medical Board of the Peekskill Hospital, Peekskill, N. Y.

and ventilation of the nasal fossæ. These irregularities and septal deflections plus the turgescent condition of the turbinates prevent the free flow of discharges anteriorly, and as a means of escape they must of necessity to some extent flow posteriorly. The presence of a mucoid or purulent discharge upon the posterior pharyngeal wall, especially when appearing as if escaping from behind the soft palate while the patient is saying A, is almost pathognomonic of sinus involvement. When this discharge reaches the laryngopharynx the patient will often be annoyed by the necessity of clearing the throat and at times by being forced to displace the discharge by means of a short decisive throat cough. At times it may be necessary to repeat this procedure two or three times before the voice becomes clear. At times the quantity of discharge is such that it must be expectorated. If the discharge is not gotten rid of in this manner it is possible for a certain amount to pass into the trachea and possibly the bronchi. Most of it, however, passes by means of the esophagus through voluntary and involuntary deglutition into the stomach, which in time responds unfavorably, as do also the intestines, causing numerous gastrointestinal symptoms, of which excessive gas formation is one. It is my opinion that the various forms of nasal accessory sinusitis will in the near future be given a prominent place in the list of etiological factors in the causation of acute and chronic gastrointestinal medical and surgical conditions.

It is the exception for children to expectorate accumulated secretions in the pharynx or properly blow the nose for clearing purposes, consequently sinusitis is a particularly vicious condition for them as practically all of the discharge passing from the nose into the pharynx is swallowed. A child with a running nose and gastrointestinal disturbances is frequently encountered, and the younger they are the more difficult is the feeding problem. Fortunately, the adenoids in such children are removed at an early age, thus removing one of the mechanical causes of sinusitis. No doubt many of us have not been perfectly satisfied with the results obtained by an adenoidectomy, one of the most disappointing being the lack of improvement in nasal breathing and lessening of the nasal discharge. The cause for this may be an infrequent condition, namely, atresia of one or both choanæ, but more frequently it is due to some maldevelopmental condition, as an irregular intermaxillary ridge or deviation of the nasal septum. Therefore, before advising adenoid and tonsil removal for the relief of faulty nasal breathing and excessive nasal discharge, insist upon a thorough intranasal examination. I wish to lay stress upon one point, however, and that is the possibility of a low grade diphtheritic infection of the nose in children. This should always be borne in mind as it may be more common than is realized.

It is not the purpose of this paper to go into a detailed description of the signs and symptoms of sinusitis, but rather to point out a few of the more easily confused features and to call your attention to the possibility of an underlying sinusitis as an obscure cause for some of the cases in general practice that do not respond to treatment as would be expected. Naturally one of the symptoms complained of is headache. This is far from being characteristic of sinusitis. In fact, many patients will state they are suffering from sinusitis associating headache with the ailment. Even with pus in the nasal fossa it is not of necessity an associated symptom. There is one peculiarity of a sinus headache, that is at times quite prominent, namely, periodicity. A patient may state that the headache occurs regularly at the same hour each day. It may be in the morning or it may be in the afternoon, but the fact that it is periodical is impressive to the sufferer. It may be the result of posture either while asleep or while at work. It lasts a fairly definite length of time and then disappears, leaving in its stead a sensation of soreness in the area involved. Complaint may be made of a sensation of fullness as if a part of the head or face were about to drop out, or of a bursting sensation of the part covering an inflamed sinus when the patient bends the head downward. There are two main causes for a sinus headache—excessive pressure within the sinus due to insufficient drainage and in chronic suppurative cases bone and nerve involvement, particularly when the sphenoid sinuses are involved. As stated before, many patients suffering from sinusitis have irregular or deviated nasal septa. As it is impossible for a sinusitis to exist any length of time without rhinitis of the same side either primarily or secondarily, headache would naturally be present, due to the pressure associated with the swollen structures in the nose pressing upon the sharp points of irregularity of the septum or its sharp or bowing deviation. A common and frequently overlooked cause of headache simulating sinus headache, especially of one or both anterior series of sinuses, is a myositis of one or both sternocleidomastoid and trapezius muscles. The temporal muscle and muscles in the supraorbital area may also be involved or may be dragged upon by the tense sternocleido and trapezius muscles. This may cause a headache or at least a pain in the frontal region. If pressure is exerted over the supraorbital area pain is elicited, due to involvement of the supraorbital nerve and consequently be misleading regarding a sinusitis.

Tenderness upon pressure over an involved sinus is not characteristic of sinusitis as the causative factor, as, for example, exposure to cold may also cause an inflammation of a nerve or nerves. This is particularly true of the trifacial nerve. The teeth should be carefully examined and the alveolar processes of the upper jaw carefully inspected and palpated, especially in the region of the first and second molars, bearing in mind the proximity of the roots of these teeth to the floor of the antrum. The canine fossa may be an area of tenderness due to the involvement of the root of the tooth of the same name and thinness of the bone covering it anteriorly, thus simulating antral disease. The excessive tenderness elicited at the inner angle of the orbit may be due to frontal or ethmoid disease, or both. To distinguish between frontal and ethmoid involvement, for the former pressure is made upward and outward and for the latter inward and downward, both motions being of a rotatory nature, or at least following the contour of the bone in the directions noted. Manifestly in frontal disease in which there is erosion of bone pain or tenderness can be elicited

directly over the front of the sinus with no chance of mistaking it for a supraorbital nerve inflammation.

Eye symptoms are not uncommon—blurred vision, sudden loss of vision, and pain behind the eyeball should be danger signals calling for a complete vision and eyeground examination followed by a complete rhinological examination. Such conditions as optic neuritis, thrombosis of the central vein of the retina, papillitis and double chocked disc may arise in the course of sinusitis. Unfortunately these are at times of insidious onset with but scanty discharge from the nose. Even upon opening up the ethmoids and sphenoids radically often times only a small quantity of a watery somewhat milky colored fluid is released. Not infrequently the opthalmologist by a process of exclusion will ask to have something of a radical nature done to the sinuses as a last resort in the hope of affording relief or as a means of cure. Under such circumstances laboratory collaboration, namely, uranalyses and the Wassermann reaction, is imperative. The use of the x ray is highly important, not only from the diagnostic but more particularly from the surgical viewpoint.

To illustrate, reference is here made to two instances of recent occurrence wherein there was no doubt as to the presence of an acute suppurative frontal sinusitis. All the classical signs were present over both frontals in each patient, but in each instance one side showed more marked evidences than the other. Operation was imperative, but following the dictum "no x ray, no operation" (this cannot be stated as being irrevocable—there are circumstances negating it), much unnecessary exploration and time were saved by the reading of the still wet x ray plates. These showed not a bilateral suppurative frontal sinusitis, but a marked deviation from the anatomical normal. The septum between the two frontal sinuses was in each patient far to one side of the median line of the body. The diagnosis then was not bilateral suppurative sinusitis, but unilateral—one large sinus showing severe involvement and one small sinus showing mild involvement. The larger sinus only, in each instance, was opened and the subsequent course of events proved the great value of the x ray in showing anatomical variations and thus expediting surgical procedure.

X raying of the teeth should be done at frequent intervals, however, irrespective of any sign or symptom referable to a sinusitis. A crowned tooth should always be looked upon as a potential focus of infection.

Transillumination is of doubtful value except in marked differences of the maxillary antra, and if this is great the symptoms would have already directed attention to this sinus.

Eustachian tube and middle ear involvement is frequently secondary to the rhinopharyngeal inflammation arising in the course of a chronic sinusitis. It is not necessarily a direct continuation of the inflammatory process but secondary to lymphatic absorption and transmission. Manifestly an acute suppurative otitis media may be induced mechanically by the transference of infected sinus discharge into the eustachian tube as in outdoor or tank bathing or by means of the excessive air pressure used to clear an obstructed nose of mucus or pus.

Anosmia or loss of the sense of smell is a symptom not infrequently complained of, and at times its sudden onset is the chief reason for the patient presenting himself or herself for treatment. Their greatest concern is regarding the permanency of this ailment. Anosmia associated with an acute catarrhal sinusitis or rhinitis invariably disappears with the retrogression of the inflammatory process and consequent lessening of the swelling of the involved intranasal structures. Parosmia or perverted sense of smell is not so frequent, but at times patients complain of everything seeming to have the odor of burned straw or other substances. This condition rarely persists, but in the event of either being present and the sufferer seeks advice upon the matter, attention should immediately be directed to a sinusitis being the cause and a differentiation made between pressure and actual nerve disease, or a psychic state of the patient.

RHEUMATISM

Any person who has passed through life without having suffered from rheumatism in one form or another to some degree must have been born, lived and died in the ethereal state; in other words, rheumatism is the most common and widely disseminated condition known to affect living creatures. It is selfevident, then, that its remote causes are manifold, but its specific cause with very few exceptions undoubtedly is a toxin. In any case of rheumatism it is incumbent upon the physician to institute a diligent search for a focus of infection and not to be satisfied with the locating of one, but when possible eliminate it, and be on the lookout for still another. If you consider for a moment the location of a nasal accessory sinus and its possibilities for harboring infective organisms, the chances of being the seat of an active or low grade inflammation and the possibilities for toxin absorption, you can readily appreciate its potential possibilities as an underlying or even accessory cause of rheumatism. Unless the lining membrane has become thickened absorption is rapid. The more permeable the membrane the more prone are certain symptoms to arise, provided a toxin is present that is inimical to that particular person. As the natural opening to any of the sinuses is comparatively small, mostly poorly situated for drainage, and the mucous membrane surrounding it somewhat loosely attached, any inflammatory process increases the bulk of the membrane and consequently decreases the size of the opening. A thin infective retained secretion is more likely to be absorbed and therefore cause symptoms of a systemic character. If there is not marked retention and a small quantity of discharge escapes, and due to caues inherent in the nasal formation passes into the pharynx there is a vast area of lymphoid tissue being bathed in a discharge of varying toxicity. That absorption does occur from lymphoid tissue requires no further proof than citing acute tonsillitis as an example, for such an acute lymphoid inflammatory reaction with the concomitant systemic symptoms is selfevident. It is in the mild types that the most frequent irreparable damage is done, in what might appropriately be termed the ambulatory forms of intermittent or chronic lymphoid involvement, for while reference is

here made to the tonsils, it must not be forgotten that the pharynx is practically surrounded by a ring of lymphoid tissue, including the adenoid and the lingual tonsillar tissue. With this ring intact in a child suffering from so-called growing pains, give the little patient as much consideration as if decidedly ill, and seek for a focus of infection from above downward, for no doubt the presence of endocarditis discovered in later childhood or early youth is the result of forcing the little sufferer to keep pace with more fortunate playmates. Reference is again made at this point to the baneful effects of infected discharges passing into the gastrointestinal tract, with a perversion of its normal functions and a consequent toxemia expressed in the form of joint, muscle or nerve derangement.

Asthma like rheumatism is a condition arising from many causes and most frequently requires much thought and great patience to discover the cause. When successful, it is usually by means of the exclusion process. It is not within the scope of this paper to intimate the various causes of asthma nor to outline the treatment thereof. It must suffice to mention sinusitis as one actual or underlying cause and to direct attention to this fact. Cures have been obtained by the elimination of a focus of infection, particularly the ethmoid labyrinth and especially when affected by the hyperplastic form of inflammation. The infected antrum has also been a not infrequent cause.

Laryngitis of the subacute and chronic forms are often associated with sinusitis and no treatment directed to the amelioration of them is of benefit. This can only be corrected by clearing up the sinus infection and the consequent ceasing of the naso-pharyngeal discharge. This being so, it is highly important to remember this association and when called upon to treat a patient giving the history of intermittent or continuous laryngeal affection, be certain of the absence of a sinusitis before making applications to the larynx or instituting any other form of treatment.

SUMMARY

To recapitulate, the most important points in the history of the patient are the complaints of incessant discharge from the nose and frequency of the attacks of head colds during inclement weather.

Headache to be differentiated from that caused by sinus, muscle, and nerve involvement.

Eye symptoms, such as slow or sudden loss or blurring of the vision.

Rheumatoid and asthmatic conditions.

Less frequently, variations in the sense of smell.

Singly or in combination the conditions mentioned above indicate as complete a rhinoscopy as possible, and an examination of the pharynx for discharge coming from above.

Laboratory methods to be used in all eye cases giving these symptoms.

The use of the x ray and transillumination as adjuncts.

174 WEST FIFTY-EIGHTH STREET.

Prolapse of the Ventricle of Morgagni

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Before considering the subject of prolapse of the ventricle of Morgagni, we would first study briefly the anatomy of the laryngeal cavities, with special reference to their diverticula. Fränkel, of Berlin, some time ago published an important study of his subject and our researches have verified most of his histological findings, while we have cleared up certain points that the Berlin observer left uncertain.

Morgagni, in his *Inadversaria Anatomica,* says: "Between the two thyroarytenoid ligaments a slit almost elliptical in shape is found on each side, large enough to insert the end of the thumb or finger, according to the size of the larynx. These slips are openings of remarkable cavities. The lower part of the thyroarytenoid is situated underneath their lower wall. Outwardly, they are covered for quite an extent by the middle and upper fibres of this muscle. At the point where they approach the epiglottis, these cavities are more or less high, because there is a diverticulum or appendix present, easy to feel with the probe."

This diverticulum, situated in front at the point where the ventricles approach the epiglottis, is usually regarded by most anatomists as homologous to the large cavities present in certain mammalia and known by the name of laryngeal sacs and extend more or less far down into the region of the neck or thorax. Thus in the orang-outang these diverticula, filled with air, are seen to cover the anterior aspect of the neck or even to descend into the axillæ. Functionally they are regarded as true sounding-boards.

The ventricular cavity is elongated in the antero-posterior direction, while its transversal diameter is directed from within outwardly. The diverticular appendix forms with this cavity a right angle bend whose bisector is situated from above downwards and in front backwards. It dilates above and behind. It passes out through an orifice hardly larger than one millimetre by narrowing itself on the upper wall of the ventricle. This orifice, whose starting point is in the ventricle, just beside the epiglottis, terminates, according to Fränkel, behind near the middle third of the upper wall of the ventricle, the corresponding half of the larynx being looked at full faced.

What is the shape of the appendix? Morgagni, Luschka and other observers simply measured its length by means of a probe, but this procedure gives very indefinite results, because the appendix, sur-

FIG. 1.—Laryngeal tonsil. 1, anterior part of thyroid cartilage; 2, arytenoid; 3, duct of glands opening into the diverticulum.

FIG. 2.—Suspensory ligament of the laryngeal mucosa at the ventricular bands.

rounded as it is by soft structures, allows itself to be lengthened or pushed aside. The same objection can be made to the procedure of moulding generally employed. In this respect Fränkel made a long series of sections and he came to the conclusion that the dimensions and shape of the appendix vary considerably from one subject to another. Thus the upper dome which usually extends to the arytenoepiglottic fold varies in height, not only in different subjects, but in the same subject if both sides of the larynx are examined.

We shall give a detailed description of the sections we have made at the level of the region of the larynx under consideration with an attempt to bring into relief those details not touched upon by Fränkel, such, for example, as the considerable abundance of the closed follicles adjacent to the diverticula and the arrangement of the fibroelastic tissue. We also give drawings of horizontal sections that we made on the normal larynx of a four and a half year old child who died of tuberculous meningitis.

This larynx, obtained thirty-six hours postmortem, was nevertheless in a very good state of preservation because the weather had been very cold. It was fixed in Kleinenberg's fluid, then washed in running water before being included in paraffin. We have obtained excellent results by leaving the sections, previously glued on glass slides with thirty-three per cent. alcohol and deparaffinized, for about an hour in water before treating them with picric thionin (Sabrazès), which makes their preparations very favorable for a minute study of the section.

The transverse sections, passing at the limit of the ventricular bands and arytenoepiglottic folds, above the ventricle of Morgagni, offer a rounded surface, having for centre the laryngeal cavity which has a grossly lozenze shaped outline with a great antero-posterior diameter. The posterior angle is flanked on each side by the two arytenoid cartilages which form two oval zones.

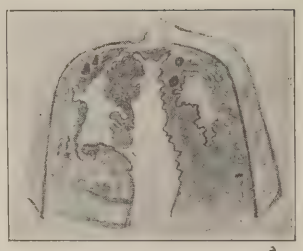

FIG. 3.—X shows point of entrance of the diverticulum above Morgagni's ventricle.

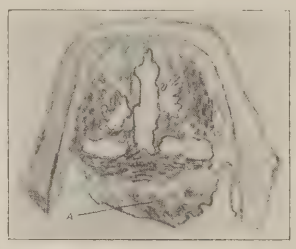

FIG. 4.—A, pharyngeal glands.

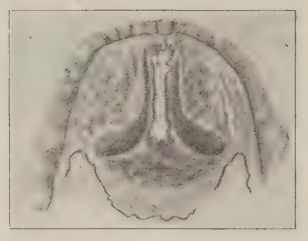

FIG. 5.—Transverse section of larynx at the level of the vocal cords. X shows the anterior group of glands.

The anterior angle has the appendices of the ventricle of Morgagni on each side, in their ensemble lying parallel with the sides of this angle from which they are separated for a distance of one and a half to two millimetres. In front the sections are bounded by the thyroid cartilage. The mucosa which lines the central cavity of the larynx is tortuous. It consists of stratifications of cylinder cells measuring from about 46.5 micron to 93 micron in thickness. The superficial layer is composed of cylinder cells with cilia, these being detected with difficulty. Some caliciform cells are interposed and here and there are gorged with mucus, the thionin resulting in a violet metachromasia. The free edge of this epithelial lining is dotted with cellular débris, desquamated epithelial cells, and a few polynuclear leucocytes. A few leucocytes with a polymorphous nucleus are also to be found in the midst of the deep seated epithelial cells; they are readily recognized by the aspect of their nuclei and the intense stain taken on by the latter. Among the lining epithelial cells which contain a distinctly outlined oval nucleus in which chromatin is condensed in one or two small nucleoli, there are some whose nucleus is deprived of nuclear membrane and transformed into a chromatic mass. Others are seen in a more advanced phase of division.

The subepithelial stratum is implanted on a membrane forming a plasmic line 3.48 micron broad. The chorion is formed by interlaced thin fibred connective tissue which is traversed by numerous fixed cells and is arranged parallel to the laryngeal cavity surrounding it like a ring. These connective tissue fasciculi are made evident by acid picric fuchsin. Many capillaries are to be seen 15.5 micron distant from the basal membrane. Occasionally they are only 46.5 micron to 62 micron distant from each other and are gorged with red blood corpuscles.

Not far from the basal membrane one also finds the excretory ducts of the glands in longitudinal or transversal section, in the latter case measuring about 31 micron. They are regularly round, bordered by a single layer of cylindrical cells, while their central lumen, containing mucus, measures hardly more than 15.5 micron.

In the chorion, 66.2 micron from the basal membrane, follicles exist whose broadest diameter varies between one half to one quarter of a millimetre. One of these follicles is to be found especially on one of the sides of the $\wedge$ formed by the laryngeal mucosa, traversed by two glandular excretory ducts and presenting a gaping capillary on the edge facing the basal membrane. The apex of the $\wedge$ joined in front by the cavity of the larynx is lined with an adenoid tissue lying immediately under the epithelium, but this arrangement is not depicted in our drawings.

In the chorion one also sees in its midst acinous

glands, some of which empty directly into the laryngeal cavity, the others into the diverticulum prolongations of the ventricles. The largest of the glandular lobules measure 662.8 micron, the smallest 331.4 micron. Their excretory ducts are not situated in the centre but on the side of the glands. The oval acini, in close juxtaposition, are made up of a basal membrane lined with parietal cells; their central lumen is filled with nuclei derived from desquamated cells. The epithelium of the excretory ducts is cylindrical and distinctly outlined. These glands are very numerous, there being some thirty lobules on each side between the diverticulum and the laryngeal mucosa.

THE DIVERTICULA

The distance separating the laryngeal mucosa from the diverticulum is, in front, 165.7 micron; but this distance varies from 828.50 micron to two millimetres. The diverticula are symmetrically arranged in the sections we are envisaging and measure two millimetres in length and 1.15 mm. transversally. They present very irregular contours, their lumen being filled with desquamated epithelial cells. They are lined with very long cylindrical cells with cilia, visible only at certain spots of the mucosa, but absolutely unmistakable. Among these cells some are to be found ending in a plateau, others assume the aspect of caliciform cells. These cells, with an elongated nucleus, form a very dense line; they are thin, arranged in one or two layers irregularly distributed, and, so to speak, dovetail each other. The total height of this lining is about 994.20 micron.

At this level (Fig. 1) the diverticula present two follicles immediately under the mucosa, one in front, the other behind and inwards. There is also one on the internal side and two on the external side. Besides, there is a very large follicle situated in the midst of the chorian between the diverticulum and the thyroid cartilage, 257 micron behind this cartilage and 330 micron distant from the diverticulum. The lymphoid clusters are united with each other by adenoid tissue which borders practically the entire diverticulum. These follicles are traversed by gaping capillaries. Excretory gland ducts are also to be found in the very substance of the follicles. These ducts empty into the cavity of the diverticulum and in serial sections the point of anastomosis of these excretory ducts can be distinctly seen.

Quite numerous vessels twine about all the follicles, their calibre measuring from 400 to 414 micron. All these structures are buried in a thin fibred fasciculated connective tissue which becomes thicker around the vessels.

Besides the follicles there are also numerous glandular lobules, particularly near the diverticula and around which the connective tissue is more abundant. Striated muscular fibres lie between the laryngeal mucosa and the apex of the diverticulum and are especially numerous in front of it. In the midst of these fibres glandular lobules are embedded and assume very close relationship to the thyroid cartilage, although without penetrating it. Some of these lobules are even in contact with the perichondrium. Behind, these glandular islands likewise come very near to the arytenoids and acini can be found 66.28 micron distant from the cartilage.

This description applies equally to both sides. There are two diverticula presenting the same anatomical arrangements, but the grouping of the follicles around them is not absolutely symmetrical.

Glands are found behind the arytenoids where a dozen lobules empty into the laryngeal cavity by a single common duct. The laryngeal cavity is incomparably less rich in adenoid tissue than the cavity of the diverticuli. The cartilage belongs to the hyaline type.

In these same serial sections we have studied the topography of the elastic tissue with orceine acid (Fig. 2). The entire region lying behind the arytenoids is extremely rich in elastic tissue; the fibres entwine the glands and fasciculi extend parallel to the mucosa from 82.85 micron to 99.42 micron distant from it. These fasciculi become thicker behind the thyroid where on each side are four fasciculi measuring from 99.42 micron to 165.7 micron in thickness. The perichondrium continues without any line of demarcation with the fibroelastic tissue. At this spot the chorion is solidly united to the perichondrium by fine fibred connective tissue heaped up against each other and which dip into the thyroid cartilage like a wedge, becoming intimately mingled with the perichondrium. This arrangement forms a veritable suspensory apparatus for the mucosa, with an elastic framework, a common centre at which the lower ligament of the epiglottis and elastic fasciculi end, encircling the laryngeal cavity like a ring. On the other hand, the elastic tissue surrounding the diverticuli is reduced to a few fibrils around and in the follicles. Around the glands and in the muscular areas there is a rather marked development of the elastic tissue.

In the sections made in the lower region of the ventricular bands (Fig. 3) the thyroid cartilage lies in front and the arytenoid cartilages behind, forming an oval surface. The epithelial lining is of the stratified pavement type and around the epithelial border mucous glands exist, some of which empty directly into the cavity of the larynx. At the level of the mucosa belonging to the bands is to be found a single lymphoid mass, and this poverty of adenoid tissue contrasts with the rich development of follicles in the walls of the diverticula which contain four or five large follicles connected with each other by submucous adenoid tissue.

The diverticula have an extraordinarily clear outline and in serial sections we fell exactly upon the isthmus of communication (measuring 160 micron) of the appendix with the laryngeal cavity (Fig. 4). At this lever there is an extraordinary abundance of glands. Thus on each side, between the arytenoids and the ventricle, exist nine clusters of glands and seven or eight others between the diverticulum and thyroid cartilage. These glands, both at the level of the thyroid and arytenoid cartilages, are in direct contact with the perichondrium and are embedded in fibrous tissue whose structure recalls that of the perichondrium. The vessels are here more numerous than higher up and outside the arytenoids there are two or three thickwalled arteriolæ.

The muscular tissue is arranged in fasciculi to the outer side of and behind the ventricle, in front and to the outer side of the arytenoids, and at this level it continues with the perichondrium by means of

minute tendons. Some of these tendinous fasciculi extend along the side of the thyroid cartilage.

Other serial sections involve the lower portion of the ventricles showing the pharyngeal mucosa composed of stratified pavement epithelium (Fig. 4). This region is convex behind in its middle and the mucosa afterwards folds upon the wings of the thyroid cartilage, assuming the shape of a capital M, the middle downstroke of the letter being rounded (Fig. 4).

Below the pharyngeal pavement epithelium is loose connective tissue containing a few excretory ducts of glands. In the middle portion, corresponding to the down stroke of the M, these ducts are four in number. At this spot numerous pharyngeal glands exist forming thirteen lobules around which the connective tissue is thickened. The glands are accumulated at the tip of the M to the extent of 2.716 mm. In front of them is a muscle arranged in the shape of a transverse sling between the laryngeal and pharyngeal cavities. Laterally the pharynx forms two lateral excavations whose chorion is made up of loose fibrillary connective tissue transversed by vessels and nerves.

The laryngeal cavity has a grossly pisiform aspect, the posterior part being bifid and the median portion raised, while the anterior end tapers off. It is entirely covered by stratified pavement epithelium and on each side the ventricular cavities are completely isolated from the laryngeal cavity by a narrow bridge of tissue and lined with stratified pavement epithelium.

The arytenoid cartilages are very near the mucosa and slightly inflected from behind toward and from within outward. No follicles can be seen along the laryngeal mucosa except one situated behind to the outer side of each ventricle just under the mucosa. Symmetrical gland groups exist in front of the arytenoids, which empty into the lateral cavities. There are also some glands in the midst of the muscle fasciculi, but none exist in front between the laryngeal cavity and thyroid cartilage. Some prearytenoid gland clusters are in contact with the perichondrium.

At the level of the vocal cord the same arrangement of the glands exist as in the pharynx. The arytenoid cartilages look like bobbins lying obliquely from in front backwards and from without inwardly and incurved in the shape of a leg of mutton whose knuckle bone runs alongside the posterior aspect of the laryngeal cavity. The lining epithelium of the laryngeal cavity is the stratified pavement type with absolutely flat superficial cells. The glands are situated between the thyroid cartilage and tip of the larynegal cavity and at this latter point large lobules exist (Fig. 5).

Below the epithelium the chorion is made up of loose connective tissue with very thin fibres. Adenoid tissue is diffused in the chorion in front of the laryngeal cavity.

The cavity of the ventricle is quite simple. Its contours are not geometrical, this being due to the folding of its walls. On the other hand, the appendix is represented by a system of sinuses and small ducts; the latter being veritable excretory ducts deserve particular mention, all the more so because macroscopically nothing can be seen that recalls accessory ducts near the principal cavity.

Hence the diverticular appendices represent a tubular prolongation directed from below upwards and backwards. Their longitudinal diameter is greater than the transversal, but the latter gives off numerous sinuses to the right and left which, by enlarging at certain spots, results in a most irregular aspect. The prolongation is lined with cylindrical epithelium *en plateau,* with ciliæ. Adenoid tissue is extremely abundant around the diverticula uniting many follicles together. We have been struck by the number and considerable size of these follicles, which decreases as one reaches lower down. This crown of peridiverticular follicles has been described by us in a normal larynx from a child four and a half years old who died from tuberculous meningitis.

We did not find this anatomical arrangement in sections of the larynx from a fetus of six months intrauterine life who died a day after birth. They did not exist around the diverticula in serial sections, while the adenoid tissue was merely represented by a few lines of cells. On the other hand, in serial sections made on a normal larynx from a female of fifty years, who died from pulmonary tuberculosis, the diverticula were bordered by a thick ring of adenoid tissue condensed at certain spots and nevertheless the follicles were quite as well differentiated as in the four and a half years old child.

The appendix serves as a depository for a multitude of gland clusters around it. These glandular groups, which empty into the cavity of the diverticuli, are embedded between the muscular fibres which lie between the cartilages and the diverticula. The glands, here and there confounded with the perichondrium of the thyroid cartilage in front and with that of the arytenoid cartilages behind, are embedded in a fibroconnective tissue which continues with the perichondrium of the arytenoid cartilages behind and laterally and in front with the thyroid cartilage.

This anatomical summary shows that the diverticulum in man should not be regarded as a resounding box. Its lumen is narrow, tortuous, riddled with glandular excretory ducts, lined with adenoid tissue which, in children of a certain age, is condensed into numerous follicles. To collect, as if in a reservoir, a liquid derived from numerous surrounding glands destined to lubricate the vocal cords, was a function long since referred to by Fränkel which, in our way of thinking, seems to fulfil the anatomical makeup of these diverticula.

From our personal researches we are inclined to suppose that, in consequence, these follicles offer a striking resemblance to a spread tonsil. This analogy has been suspected by anatomists. For example, Merkel looks upon the diverticulum as a large mucous crypt, while William Hill calls the ventricle —in the true sense of the word, but not the ventricle itself—the laryngeal tonsil and compares it to the monocryptic tonsil of the rabbit. Nothing better could be said, but from our viewpoint this appellation should be applied, not to the ventricle, but to its diverticular appendix, our researches having completed those begun by Fränkel.

The presence of adenoid tissue and follicles in the chorion of the mucosa lining Morgagni's ventricle was demonstrated in 1874 by Coyne in his thesis. This writer mentions about seven follicles in the walls

of Morgagni's ventricle almost constantly present in children in perpendicular serial sections made at the midportion of the vocal cords. The arrangement of the adenoid issue and follicles around Morgagni's ventricle was therefore an established fact in 1874, and there is nothing to add to these findings. Coyne indicates, among other things, the presence of two follicles which, in vertical sections, occupy the vault of the ventricle, one belonging to the ventricular aspect of the upper vocal cord, the other to that part of the mucosa covering the thyroid cartilage and subjacent muscles.

Nowhere is mention made of the very interesting arrangement of the adenoid tissue around the long prolongations sent off by the ventricles into the midst of the arytenoepiglottic folds. For that matter the diverticular appendices could not have been understood by the observers cited previously in the longitudinal sections of the larynx as published by them. With the exception of Fränkel, none have depicted them, and his description is more than summary from the viewpoint of the adenoid tissue. Now it is to this diverticular appendix, difficult to detect macroscopically, whose study can be undertaken only in serial transversal sections that, according to our way of thinking, one can apply the name of laryngeal tonsil. The crown of follicles which surrounds it in children is, in fact, uncomparably more developed than the adenoid tissue referred to around the ventricles.

Studying the diverticular appendix of Morgagni's ventricle in a premature six months fetus, we were extremely surprised to be unable to discover only a vestige of adenoid tissue at the site of this remarkable area of follicles. The appearance and development during early childhood of these follicles should therefore be envisaged as a process of defense of the organism to infectious agents, especially of the respiratory tract. This need of defense is entirely created by hypertrophy of the lymphnodes and follicles, the advanced sentinels against infection.

To conclude, Morgagni's ventricles and their diverticula have two functions, viz., they collect products of gland secretion destined to lubricate the vocal cords, they contribute to protect the larynx against external injuries and especially microbic invasion.

(To be concluded)

Sterility in Women*

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The subject of increasing sterility among highly civilized peoples has now become so important as to be regarded as a sociological problem of the first order. Throughout the world the birth rate appears to be in direct inverse ratio to the material prosperity and intellectual advancement of the races under consideration, so that it is now estimated that among the foremost peoples of the earth one marriage in every ten is childless.

Sterility in women may be due to any one of a number of causes. Several of these—such as fetalism, infantilism or certain infections—are readily recognized as definite bars to childbearing, but omitting these conditions from consideration, there are many cases which baffle the skill of the gynecologist. Frequently women will be seen in whom the closest scrutiny reveals no reason for sterility, who are married to healthy, demonstrably potent men, but who have failed to become pregnant during a number of years of married life.

Recent literature offers little that is new concerning the causes or treatment of sterility in women, and therefore, it seems justifiable to emphasize the only two recent advances in our knowledge regarding this condition. These two contributions are the etiological influence of endocervicitis so courageously upheld by Sturmdorf, and the diagnostic procedure of transuterine insufflation of the oviducts, originated by Rubin in 1920.

CLASSIFICATION

When a woman living in normal sexual relations has never conceived, her sterility is said to be primary; and it is customary to refer to primary sterility when a union has remained unfruitful for three years or longer.

Secondary sterility is the term applied to those cases where a woman has been able to conceive but through acquired causes is later rendered unproductive. Thus we have the patient who has given birth to one child, and thereafter acquired a postpartum infection which has prevented a repetition of conception, the socalled one child sterility; or again, the woman who, healthy at the time of marriage, has suffered a marital venereal infection, resulting in the production of pus tubes.

Female sterility is also classified as absolute when the cause—congenital or otherwise—cannot be removed; or relative, if the sterile condition depends upon the infertility of the male partner, or upon some factor which is amenable to surgical or other correction.

ETIOLOGY

Before considering the causes of sterility it is necessary to have in mind the conditions essential to the occurrence of normal pregnancy.

1. Female generative organs, anatomically and physiologically normal.
2. The deposit in the vagina of living healthy spermatozoa.
3. Retention by the spermatozoa of their viability and activity of movement for a time sufficient to enable them to find their way first into the uterine cavity, and then into the fallopian tubes.
4. The formation of a healthy ovum in the ovary capable of traveling into the tube to a point where it can be fertilized by the spermatozoon.
5. An unobstructed passage for the impregnated

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ovum on its journey to the uterus, and a proper nidus in the subepithelial tissue when it has arrived at the uterine stroma.

Considering the first requisite, normal generative organs, we must remember that if the deterrent factors are congenital defects, they may, following Graves's classification, be divided into two main groups: fetalism and infantilism. Fetalism, a term first introduced by Alfred Hegar, is applied to the condition where a faulty or arrested development has occurred in intrauterine life, and is represented by such anomalies as nonunion of Müller's ducts producing uterus didelphys; or the various forms of aplasia, such as absence of vagina, uterus, etc., or their presence only in rudimentary form.

Infantilism, on the other hand, denotes that though the individual was born with a full complement of organs, development has been arrested, so that at puberty the sexual apparatus has remained wholly, or in part, that of a child. This may be the only sign of infantilism in an otherwise fully developed female, or, it may be but one manifestation of a condition of general hypoplasia. Thus, infantilism may usually be found in either of two types of women: one, the large, often fat woman who menstruates seldom or not at all, and on the other, the small, scrawny female who is not infrequently mentally defective as well. This brings us to the subject of endocrinology, for the development, as well as the physiology, of the genital organs is intimately related to the internal secretory functions. The anterior lobe of the hypophysis—as has been demonstrated by Biedl, Cushing, and others—controls the growth of the genital organs as well as that of other parts of the body, and the thyroid may also have some influence upon sexual development. The other endocrines, such as the adrenal cortex, play a rôle, if not in the development, at least in the functions, of the sexual organs. Likewise the interrelationship of the different organs of internal secretion, as between the gonads, the thyroid gland and the pituitary body, though seen and felt, is still far from being thoroughly understood.

In addition to fetalism and infantilism there are also conditions where minor defects, often susceptible of correction, exist which will be sufficient to prevent conception unless removed; for instance, a pin hole opening in the cervix. Only eight months ago such a patient presented herself to me with the history of eight years' sterility. On examination the cervical os could be found only with difficulty, and even after dilatation admitted only a one, two, and three size Hegar dilator. Yet much to my surprise, after a few dilatations the woman became pregnant.

Malpositions and flexions also come under our first heading. A retrodisplacement of the uterus may, by throwing the cervix under the symphysis, prevent spermatozoa from gaining access to the uterus. In the words of Arthur E. Giles, the English gynecologist: "The os looks so far forward that during intercourse it is pressed against the anterior vaginal wall, which thus closes over the os like a lid, and so effectually prevents the entrance of spermatozoa." This author's tables show that among 530 cases of primary sterility, retroversion was present in fifty-four, or 10.2 per cent. Marked anteflexion or retroflexion may operate in the same way. That the flexion can in itself mechanically obstruct the passage of spermatozoa, is denied by most authorities, because, as is selfevident, if the flexion will permit the menstrual flow it would certainly permit the entrance of the microscopical spermatozoa. Yet, even then, congestion and inflammatory changes at the internal os or below it induced by the displacement, may bring about sterility. New growths in the uterus, such as those of malignant diseases, and—to a smaller extent—myomatous changes, may likewise be causes of sterility.

In addition to anatomical anomalies there are also the physiological dysfunctions which are sufficient to prevent childbearing. Dyspareunia means difficult intercourse or the inability to perform the act without pain, and is more commonly applied to the female. The condition may arise any time, but is usually seen in the newly married. Generally it is due to some pathological condition, such as vaginitis, the existence of a small urethral caruncle, or extreme tenderness of the carunclæ myrtiformes. In examining a case of dyspareunia it should be borne in mind that unless carefully sought the lesion may be so small as to escape notice altogether.

Vaginismus, although only a neurosis, is a terrible affliction to any young woman. It was first described by Marion Sims who is quoted by Gibbon as designating it as "an excessive hyperesthesia of the hymen and vulvar outlet associated with such involuntary spasmodic contractions of the sphincter vaginæ as to prevent connection." The gentlest touch will cause a spasm of the powerful levator ani and the other muscles around the vaginal outlet, producing such a contraction that, not only is it impossible for the male organ to enter, but it is even impossible for the gynecologist's finger to gain access for examination. The condition usually exists in women of neurotic type, and may be brought about either by lack of virility in the husband at the beginning of married life, which leads to unsuccessful attempts at coitus, or to ignorant brutality in the male approach, which at times not only induces fear, but very likely frigidity, as well. Frigidity in itself, however, is not necessarily a cause of sterility, for we all know of cases where conception has taken place in spite of lack of sexual desire.

STERILITY INDUCED BY PATHOLOGICAL CONDITIONS

Coming now to those acquired conditions which, in a previously healthy woman, have brought about changes which have caused her to become sterile, we will find that recent advances in pathology have not only increased our knowledge of these conditions, but placed us in a position to help at least a portion of those unfortunates who apply to us for relief.

The epoch making investigations of Hitschman and Adler have proved that the corpus uteri withstands most infections, seldom becoming inflamed. They "hold that the only true endometritis is that of the interstitial type; that the socalled glandular endometritis does not exist, but that most of the appearances hitherto described as such, are merely physiological changes in the glands occurring in the course of the normal menstrual cycle, and that when glandular hyperplasia is definitely present it is more of the nature of a new growth than of an inflammation." It is well known that, in the majority of instances, even the gonococcus, though it travels

directly through the uterus to the adnexa, rarely affects the uterine mucosa. Of course, there are virulent invasions able to overcome even the resistance of the endometrium; also tuberculous conditions, but they are rare.

It is at the neck of the uterus that the real obstacle to conception most often exists. As has been emphasized by Sturmdorf, the cervix is by far the most important element in causation of sterility, at least so far as infections and inflammatory changes are concerned. Not only does the presence of the plug of mucus in itself act as a mechanical obstruction, or the discharge of pus prove sufficient in a great many cases to kill all spermatozoa seeking entrance, but also, as Sturmdorf has shown, the infection traveling to the adnexa through the lymphatics can cause that chronic condition which he aptly calls periadnexitis, called by others pelvic inflammatory disease, and in this way produce constriction in the oviducts so that they do not permit of passage of ovum or spermatozoon. This is a much more absolute bar to conception than the artificial ligation of the tube, which, as shown by Fritch and others, does not in all cases bring about sterility.

The endocervicitis causes an ascending lymphangitis which travels along the muscular planes of the uterus and tubes, and, reaching the ovary, thickens its capsule and interferes with the normal rupture of graafian follicles, forming retention cysts of the ovary and thus adding ovarian functional insufficiency to the pathological chain. The lymphatics drain into the larger vessels on the outer surfaces of the uterus and tubes, often producing the cobweb adhesions between the pelvic organs, which so often bring about constriction of the tube. In its upward journey through the uterine lymphatic system, the infection naturally infiltrates the muscle bundles themselves and in this way inhibits uterine contraction. The consequence of this is interference with the uterine circulation which, because of the valveless veins in the uterus, requires those contractions. The resulting engorged endometrium forms a very poor site for ovular nidation. Associated nutritional changes often bring about early abortion for which no cause is assignable. Such an abortion is often believed to be a delayed menstruation, as in the woman who several times a year goes a week or two over her period and then menstruates, though at other times she menstruates regularly.

On reaching the tubes the infection leaves its mark there by the periadnexitis which occludes the fimbriated ends and the formation of adhesions which will naturally cause the kinks so often found in abdominal sections. In time the passage of the disturbed circulation through the walls will cause a true salpingitis.

Though endocervicitis may be acquired after marriage we often see it before marriage; even dating from childhood. Many girls presenting themselves for treatment for dysmenorrhea and other menstrual disorders give an associated history of leucorrhea, usually of long standing, and acquired either in infancy, in school or elsewhere, and we all know how intractable is the socalled vaginitis of children. I say socalled because most of these cases are actually a true endocervicitis.

This endocervicitis does not always reveal itself by the characteristic erosion; the external os may appear normal except for the telltale discharge which we must learn to recognize and treat. Without endocervicitis there can be no cervical discharge recognizable by the patient, and dysmenorrhea likewise is usually present. By recognizing this condition even when inspection alone fails to reveal it we will be in a better position to understand the consequences already described.

The result of this ascending infection on the uterus and adnexa is often impossible to detect by bimanual examination, because the bands and kinks are impalpable and the ovary and uterus may not be painful to the touch. Here it is that the second great advance in our present knowledge of sterility has been made by Rubin through his positive demonstration of the patency or nonpatency of the fallopian tubes, by passing oxygen or carbon dioxide through the uterus and tubes into the peritoneal cavity; failure of the gas to pass indicates that the tubes are occluded.

As in all other advances in sciences the very simplicity of the idea emphasizes its greatness. The technic is simple and, like all such procedures, is best carried out with the special apparatus designed by the inventor and in the same manner as performed by him. Rubin's instrument not only gives the pressure under which the gas flows, thus showing whether an obstruction exists and if so, its extent, but also when there is no obstruction it estimates quite accurately the amount of gas introduced into the peritoneal cavity, thus obviating the discomfort and, at times, shock, caused by the introduction of too much gas. Oxygen may be employed, though it is not quite so good as carbon dioxide which, being more readily absorbed, naturally causes less discomfort, though even with oxygen this is at no time unendurable. The test is best made in an institution, unless the operator has an x ray outfit in his office. While one can judge by the pressure which rises steadily in the nonpatent tube, in contrast to the rise in the open tube to 100, then 150 mm. followed by a drop to 80 to 60 mm. as soon as the gas flows through, or, by the characteristic pain in the left shoulder due to the gas rising to the left hypochondrium, it is still better to use the fluoroscope so as to be able to see the shadow of the gas in the peritoneal cavity. One main contraindication to this test is any inflammatory disease of the generative organs, but in most of such cases we do not need the test.

The second factor necessary to conception—normal, healthy spermatozoa—is selfevident and needs no discussion, but the third, that the spermatozoa retain their viability and motility so as to enter the os and the uterine cavity brings us to the consideration of agencies which may hinder that accomplishment. Hyperacidity of the vaginal secretions may overcome the alkalinity of the semen, killing the spermatozoa or inhibiting their activity. The vagina may be so shallow that the semen flows out before the spermatozoa can find their way into the cervix. Effluvium seminus—the flowing out of semen from the vagina after coitus—is said by Runge to be a frequent cause of sterility; but the finding of a history of this condition in seventy-nine per cent. of sterile women is not, in itself, a sufficient reason for in-

fertility. Huhner, who has made extensive studies of the mechanical reasons for sterility, found in a fair sized series that this condition exists in eighty per cent. of women who have had children. As mentioned previously, the position of the cervix in relation to the vagina may render it difficult or impossible for the cervix with its open os to dip into the seminal pool, and, let it be repeated, the frequent presence of endocervicitis in various ways may prevent the spermatozoa from fulfilling their destiny.

In regard to the fourth and fifth conditions it naturally requires a normally developed and generally healthy ovary to produce healthy ova, likewise a clear passage through normal oviducts and a proper site for the embedding of the ovum in the uterine mucosa. There are, however, other causes for sterility which are outside of these five postulates.

Reynolds and Macomber, of Boston, as a result of their feeding experiments on rats, assert that diet is an important element in the causation of sterility. Admitting the difficulties of comparisons with human beings who enjoy a far more complex and generally sufficiently variated diet, and that "the life conditions of the human race are much more complex than those of laboratory rats," they still believe that, "peculiarities of tastes or mistaken dietary theories not infrequently lead to the choice of a diet which is insufficient in one or the other of the vital elements." They further remind us that although infertility in a given case, with definite anatomical or pathological conditions, demands operation there may still be need of attention to accessory constitutional conditions before a cure can be effected.

Obesity is frequently associated with sterility, Gibbons estimating that the percentage of barrenness in the obese is twice as high as that of women of ordinary weight (that is, about twenty per cent.).

Yet, with all necessary conditions fulfilled there remains that class of cases where the spermatozoon alive and active in the tube does not impregnate the healthy ovum. "That many individual infertilities are functional rather than due to anatomical or pathological causes; that very moderate decrease of fertility in both individuals may produce a completely infertile mating; and that," as Reynolds and Macomber believe to have been proved in their feeding experiments, "two rats that are infertile to each other may both be fertile to other individuals, not because of obscure incompatibilities, but merely because of a decreased percentage of fertility in each," are points worthy of much consideration, and much in need of further study and elucidation.

TREATMENT

Leaving out those causes of sterility which are irremediable the treatment in cases at all possible of cure must be undertaken with a due regard to all the causative factors. Reason demands that no set rules be followed and no pet hobbies ridden. The administration of animal glandular substances to every patient is as irrational and as injurious to excellent therapeusis as the recommendation of operation in every case. Endocrine therapy is yet in its infancy and its fundamental principles not yet mastered. Nevertheless, in spite of the many disappointments we encounter, its possibilities seem almost limitless; we often meet with such brilliant results that we must feel encouraged for the future. But, in adopting it in a given case, due care must be exercised not to overlook other etiological factors upon which all the glandular substance in the world will have no effect. In such cases as ovarian dysfunction or thyroid hypofunction the appropriate exhibition of gland therapy will show quite gratifying results.

Though the question as to whether to use the ovarian substance itself or corpus luteum is still in debate, most authorities seem to favor the whole gland, leaving the use of corpus luteum to those conditions where its presence is known to be necessary, dysfunction leading to such conditions as the hyperemesis of pregnancy.

The large heavy woman with much diminished menstrual functions will frequently respond to thyroid therapy. In cases of infantilism, with at least occasional menstruation, administration of the anterior lobe of the hypophysis which controls the growth of the genital organs, will at times prove efficacious. Conditions of malposition quite often cease to operate as causes of sterility after correction by pessaries or surgical treatment. Flexions in themselves seldom cause sterility, but the resulting congestion and blocking of drainage is often corrected by a stem pessary—preferably made of glass—the results at times being quite satisfactory. But when the retrodisplacement is associated with endocervicitis, nothing but the cure of the infectious condition will prove of any benefit.

Endocervicitis is simply and easily cured if one is guided by immutable facts. Local treatment of all sorts will remedy the great majority of cases of real endocervicitis, as well as the douche will cure its resultant leucorrhea. To be sure, there are simple inflammations in the cervix which do not infect the upper organs and do not cause sterility, but when the inflammation shows its virulence by dysmenorrhea and other symptoms of upward extension there is only one course to pursue, and that is, the enucleation of the cervical mucosa.

When we remember the histological anatomy of the mucous membrane lining the cervix we shall realize how difficult it is to treat appropriately the abundant racemose glands which dip into the muscle tissue itself and are always infected. Stopping the discharge does not cure the deep seated infection. Curing the erosion is only removing one of the results, leaving the underlying condition untouched. All of us who at any time have attempted to treat endocervicitis are aware that the troublesome case will at times show improvement under treatment, but in time the infection makes its appearance again, showing that our labors, and the poor patient's time and endurance, have been wasted, for all the time the infection in the glands has been active, even though showing no outward signs. A long time ago Schroeder recommended extirpation of the infected area, but his technic removed too much of the muscle tissue itself and left too much of the infected mucous membrane. The enucleation, as taught by Sturmdorf, removes the cervical mucosa, with a thin layer of muscle, up to the internal os and covers the denuded area by a previously dissected cuff of vaginal mucosa, thus curing the endocervicitis for all time. If the damage done to the upper organs has not been too extensive the restored balance will enable the

fighting powers of the organism to conquer the existing infection, once the supply of the poison is cut off.

Functional disturbances must be treated according to causes. Dyspareunia will require the removal of the local lesions, and vaginismus, being a neurosis, must be treated as such.

It seems probable that errors of diet, though at times undiscovered and unlooked for, are a real cause of sterility and further investigation along these lines and the correction of dietary errors will clear up an otherwise unintelligible case.

Leaving to the genitourinary specialist those other considerations which more properly belong to him, I wish to call attention to the fact that every case of sterility demands of the practitioner of medicine as much time, patience, and perseverance as any of the great problems which constantly confront him, and that a multitude of factors are to be considered, some of which at times seem trivial, yet if neglected, success cannot be attained.

We are today in a better position than ever before to help the unfortunate who applies to us, and nothing but the very best that is in us should be brought to her assistance.

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Geriatrics as a Special Branch of Medicine

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It would perhaps be advisable to speak of giving special attention to senile patients, rather than to suggest a new specialty in an already overcrowded field. Medicine has become so highly specialized, however, that one feels free to discuss geriatrics as a special branch of medicine.

Only a few years ago pediatrics did not exist. Before 1860 little attention had been given to that subject. One small textbook had appeared which was entitled *Diseases of Women and Children,* and there was one chapter in it devoted to the latter. Abraham Jacobi, the Nestor of American medicine, was the first to begin a systematic course in pediatrics and in 1860, when he instituted this study in New York, the announcement was removed from the bulletin board of the college because the dean contended that pediatrics did not exist. Jacobi wrote on pediatrics and was ridiculed. A few students were interested in the subject, but the enlistments in the Civil War brought about a discontinuance of the course.

Jacobi patiently continued his researches, trying to convince the medical profession that diseases of children could not be treated like those of maturity. He faced a similar opposition when he performed tracheotomy so many times with many failures. Nothing could convince him that his theories were wrong and he lived to see the day when his work was internationally known and recognized.

Geriatrics (Greek, *geron,* old man; *iatrikos,* medical treatment) is that branch of medicine which deals with diseases of old age. It includes the prevention of premature senile changes and the care of the aged. German and French physicians had given some attention to the study of diseases of old age, but it passed into oblivion, to be resurrected only a few years ago.

Hippocrates made mention of some of the peculiarities of old age, and in 1537 Stormer wrote *Decreta Medica de Senectute.* In 1666 John Smith brought forth *The Pourtraicture of Old Age* published in London. Floyer's *Gerocomica* was printed in London in 1724 and its original form is an interesting book. Charcot's lectures on old age were published in Paris in 1866 and Dr. Loomis's translation contained some of his own lectures. The first textbook printed in English was published a few years ago by Dr. Nascher, who made an exhaustive study of the subject.

At its birth, geriatrics was treated exactly as pediatrics had been; physicians failed to understand that diseases of old age required special attention. Like every new subject, geriatrics met with scepticism and occasionally with open scorn.

Barring the New York Geriatric Society, there was no society, medical journal or medical school which gave any consideration to geriatrics. Today, medical journals throughout the country have given editorial consideration to this subject, and the lay press is realizing its importance. It is not only a medical problem but an economic one, because the more ineffective old people the heavier are the demands on State charities. Providing work for the aged to make them selfsupporting would not only relieve them of many ill feelings but cause less drain on State funds for their support.

The aged will never appeal to physicians as the children do, to specialize in their diseases does not present the same financial opportunities nor the same possibilities of cure. Physicians commonly call a disease "old age" and say that nothing can be done for the patient. Again, the latter's family does not always show keen interest in the aged relatives.

A little attention and care will often have wonderful results. When ill, an old person requires special treatment because Nature tends to cure the young and kill the aged. Applying the rules of treatment at maturity will often produce disastrous results with the aged. For example, in treating the latter it is absolutely necessary to keep patients out of bed; being kept in bed impairs the circulation, besides the psychic effect is not to be overlooked. "Keep senile patients out of bed" should be a slogan in geriatrics.

In going over our best works in literature, art, poetry and the sciences, we find that we are much richer for the brains of many old men and women, and the works of men past eighty have been a mint of knowledge. Indeed, their activities often increased as they grew older.

Senility does not begin at any given age, as it may begin at sixty or seventy, but it sometimes begins very much earlier in life. I recently saw a woman of thirty-two who had chronic nephritis, arteriosclerosis and cardiac hypertrophy, which were not due to any specific cause. In every way she showed degenerative changes consistent with a person seventy years of age and she should, therefore, come under the treatment of geriatric patients.

The age of the patient does not matter as much as the evidence of senile degeneration he shows. As a rule, most people begin to develop some senile changes at fifty and if these were noticed many serious degenerative changes could be prevented. As geriatrics includes the study of old age, of the causes which produced the changes inherent to it, many patients past the age of fifty would come under this geriatric care.

Arteriosclerosis and many of the senile degenerations depend upon nephritis and other diseases which, if treated, would prevent further pathological changes. In women many conditions developing at the menopause can undoubtedly be corrected by proper organotherapeutic measures.

By far the greatest mistake in treating old patients is to endeavor to produce results which would be normal to maturity. It is useless to give potassium iodide for arteriosclerosis, because the latter is a normal process of advancing years and does not require treatment. If we attempt to obtain results consistent with normal senile changes, we have the keynote of geriatrics. We must always strive for the norm of senility and this cannot be done without a knowledge of the pathology of the senile state. In old age all organs undergo degenerative changes, but as long as these diseased organs functionate in harmony there is no untoward result. The physician who applies ordinary therapeutics to senile patients is often unsuccessful.

The treatment of diseases of old age is a study by itself. Small doses of remedies will often produce better results than larger ones. Morphine used hypodermically sometimes causes sudden death in old age because of respiratory paralysis and it is, therefore, always safer to combine it with atropine for hypodermic use in order to prevent this harmful action on the respiratory centre.

One of the most common conditions met in old age is insomnia. Physicians often give morphine to make the patient sleep when a placebo would do as well. The aged frequently nap in their chairs during the day and when night comes they cannot sleep; to give morphine in such cases is inexcusable. Moreover, the aged do not require as much sleep as younger people and sometimes they will deny having slept, when they actually have. In some instances they will not tell their symptoms if they believe they can thus avoid an examination. In others, they will invent every known symptom, sham illness, in order to excite sympathy. Because of diminished sensibility, it is possible for an old person to have appendicitis or peritonitis without pain. The aged are as difficult to treat as children; while a child cannot tell its symptoms, an old person cannot seem to tell the truth about them. In fact, it is often easier to treat infants; they cannot lie.

Toxemias of the aged are interesting studies. Uremia will often cause symptoms similar to those of cerebral hemorrhage. Many of these patients recover under optimistic and proper treatment. A physician who works upon the theory that "nothing can be done for the aged" should not treat senile patients. Hope, carefully instilled, will sometimes pull a patient through a serious illness when nothing else will. The treatment of senile patients requires much patience and therapeutic optimism.

Many old people who are suffering from hemiplegia can be made effective again by the method of functional recuperation of Dr. Gabriel Bidou, of Paris. This is done by means of springs which replace paralyzed muscles, and enable the patient to walk again.

The secondary effects of drugs due to faulty and slow elimination must be considered because oftentimes they are more important than the primary effects. In the aged, opiates may remain in the body for several days and cause drowsiness two or three days after its administration. Again, opiates will often cause mania instead of quieting the patient. In fact, many remedies have a diametrically opposite effect from that commonly observed in maturity. In treating senile heart disease, we must resort to methods different from those we are accustomed to use.

So much depends upon the understanding of the senile organism, upon the little details that go to make life more comfortable for old persons; so much depends upon the attention and sympathy given them and upon keeping them occupied as much as possible. Two things are most necessary in this study; first, a careful routine examination of all patients, and, second, a knowledge of normal senile pathological changes. There are so many problems connected with geriatrics that its study should be more encouraged and there should, in my opinion, be special courses, of a few lectures at least, in the curriculum of medical schools; clinics should be established where the proper laboratory work could be done and where postmortem examinations could be made in order to check clinical findings.

No doubt many will disagree with me about the importance of geriatrics, but old age faces all of us sooner or later and I feel sure that when it does, we should not care to be practically cast aside or allowed to suffer from disease because it is taken for granted that we are too old to be successfully treated. The term old age applied to a patient is too often a death warrant.

114 East Fifty-fourth Street.

Practical Therapeutics

TREATMENT OF ACUTE METASTATIC ARTHRITIS*

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Every case of acute metastatic arthritis is a surgical lesion. The morbidity and mortality of these affections depend upon the realization, by physicians generally, that it is not a medical condition to be treated by salicylates, coal tar derivatives or local applications. The treatment of these acutely infected joints must be prompt and decisive. Procrastination dooms the patient to an extension of the pathology and the likelihood of restoring the function of the joint becomes more and more remote.

This type of arthritis is usually secondary to a primary focus of infection in some part of the body. When metastatic involvement of the joints is initiated by a chill, one joint, at least, will have bony ankylosis as a sequence of the infection, unless it be managed along other lines than those in which such joint involvements are usually treated.

Medical men must appreciate the fact that whenever a joint is infected, it presents certain inflammatory phenomena. These are manifested by an effusion into the joint which distends its capsule and separates the articular ends of the bone. A mild irritation by bacterial agents produces an infectious synovitis with exudation into the joint space. Bacteria or their toxins irritate the secretory layer of the capsule and produce one of three types of effusion—serous, serofibrinous or purulent. The secretion of the exudate is Nature's attempt to dilute and neutralize the poison. If the poison or toxin is mild, a serous exudate is poured out; if it is more irritating, this exudate becomes serofibrinous. When the barrier offered by the secreting layer is inadequate, bacteria in great numbers enter the joint cavity and purulent synovitis is produced.

The fulminant types of arthritis are those in which the joint is invaded by an overwhelming number or avalanche of bacteria before Nature has had a chance to throw out enough exudate to dilute the toxins or destroy the organisms. There is a rapid destruction or melting away of every element of the joint, bone, marrow, cartilage, etc. If aspirated in the early stage of this inflammation, no organism will be found in the fluid. Later, however, the bacteria gain entrance into the joint cavity. These facts demonstrate the importance of withdrawing the fluid in the early stages.

The principles underlying the treatment of these various phases of joint inflammation are simple:

Relieve intraarticular tension by removing fluid and separating the articular surfaces of the bones. Put the joints at rest until the inflammatory reaction has subsided. Encourage active motion early, when the synovial capsule only is involved, but under no circumstances must it be employed when bones are infected. Remove all débris from a joint that has undergone destruction; the sooner this is done, the less likelihood is there of extension of disease, deformity and metastases to other parts. Clean up the primary focus of the disease, increase the resistance of the patient by a nutritious diet, tonic medication and sunlight; finally, occupational therapy is one of the most beneficial agencies in restoring joints stiffened by adhesions.

John B. Murphy treated these cases by removing fluid from the joints and by the injection of two per cent formalin in glycerine; thus was produced a defensive reaction within, preparing, as it were, a barrier against invasion from without by neutralizing the infection. This treatment was followed by marvelous results. I have used this method not only in treating arthritis, but also in tuberculous joints, substituting Calot's fluid for the formalin, and have had satisfactory results.

Joints should be punctured to determine the character of the exudate. It is a measure frequently neglected but of great diagnostic import. Many physicians are averse to puncturing the distended joints, fearing added infection to the joint cavity. To this I must take exception, for when done carefully and with due attention to asepsis, it is indeed a harmless and valuable procedure. No one can tell what is going on within the joint unless the fluid is bacteriologically examined, and in the event of a bacterial invasion, we are in a better position to institute rational measures for combating it. It is my belief that many joints permanently destroyed, could have been saved by punctures and repeated aspirations. It is very curious to note how frequently spinal punctures are performed, with impunity, to relieve cerebrospinal pressure, and yet when the indication exists in a joint, physicians hesitate to relieve intraarticular pressure.

When performing a puncture or aspiration, the joint to be aspirated should be surgically prepared as for a major operation, the operator's hands scrubbed and gloves used. A hypodermic needle of medium calibre is employed and the joint is entered at its interline.

If the effusion is a clear colored serous fluid and sterile, the joint should be aspirated, the limb put at rest in a light plaster cast or splint; at the same time, traction is employed wherever possible. The reduction of intraarticular pressure relieves the pain more promptly than aspirin, morphine or any local sedative. If the fluid reaccumulates, aspiration is repeated every third or fourth day. After ten days of this treatment, the affected joint will more readily respond to the aftertreatment because the capsule and periarticular structures have not been permitted to become distended. The probability of adhesions forming is reduced to a minimum.

If the fluid is serofibrinous in character, aspiration should be employed and repeated at brief intervals. The withdrawal of the fluid prevents organization of this exudate into fibrous adhesions so frequently a sequence to this form of inflammation. If the fluid cannot be aspirated because it is too thick and turbid, irrigation of the joint is indi-

*Read before the Southeast Branch of the County Medical Society.

cated. In the knee joint, for instance, two needles penetrate on each side of the patella at the interline of the joint. Through one the fluid is removed, and into the other the saline solution enters. If the fluid still remains turbid, and the symptoms do not abate, it is then necessary to perform an arthrotomy. Taking the knee again for an illustration, an incision is made in each side of the patella through the capsule, the fluid is drained and the joint thoroughly irrigated with normal saline. No tubes are inserted. The arthrotomy wounds can usually be closed at the end of a week or ten days. Traction is invariably employed. Active motion is encouraged.

If the puncture reveals pus, the joint should be freely opened by wide incisions of sufficient size to provide adequate drainage. This is very important. No tubes of any kind should be utilized because they only irritate the joint. If used at all, they should not remain in any longer than forty-eight hours. Active and passive motion is continued both night and day. Spontaneous closure is not permitted. This is the Willems method of treating these cases, a method which is sometimes very hard to enforce, especially in children, because of the pain, and unless there is a well organized staff of nurses to encourage such patients, it is a difficult procedure. But, whenever indicated, it is attended with satisfactory results.

It must be emphasized that care must be exercised in the selection of the case for this form of treatment. I have known of two patients with arthritis of the knee on whom Willems method was tried with disastrous results. We realized later that it was ill advised. In one patient a metastatic abscess developed in the thigh which required incision and drainage. The other had acute osteomyelitis of the femur and a pyoarthritis of the knee. After evacuation of the pus through wide incisions, this patient was encouraged to move the joint as much as possible. An extensive suppuration of the facial plane of the thigh and phlebitis subsequently developed and the patient died of a streptococcic septicemia.

Sir Robert Jones states that, among the soldiers, fifty per cent. of cases resulted in a useful degree of mobility. Many patients suffering from suppurative synovitis in whom this form of treatment was employed, became much interested in the carrying out of the exercises, so when the joint became painful, they would express the pus by voluntary flexing and extending the joint.

There is a form of infectious arthritis to which this treatment must not be applied. I refer to those cases where all structures of the joints are involved, the bones to a considerable extent. After the fluid is drained, fixation is indicated. Motion, even to the slightest degree, would tend to increase the inflammation, causing pain of the most excruciating kind. The articular ends of the bones literally melt away, pathological dislocations occur early and ankylosis with deformity is the usual result. There is only one type of treatment that will save life and limb, and that is wide exposure of the joint, trephining and curretting the infected bone, if necessary, instituting free drainage, followed by fixation in plaster and weight extension. In some cases, excision must be considered, an undesirable thing to do in children, because there is the inevitable loss of an epiphysis with arrested growth as a consequence. It is unavoidable, however, when a profound sepsis is present, which can only be allayed by removing rotten bone.

I have had the privilege of treating a number of acutely infected hip joints at the Mount Sinai Hospital. There was a remarkable case of acute panarthritis in the wards at the time this paper was written, a nine year old child, on whom a rational treatment had been used, which, I believe, saved his life. For three or four days after admission, the diagnosis was in doubt, but the clinical course, eventually, led to a diagnosis of an acutely infected hip joint. The x ray was negative. An incision was made into the thigh to institute drainage. The condition improved slightly. Subsequently, another opening had to be made to provide more adequate drainage. This also proved ineffective, and the condition became desperate. The child was extremely septic and suffered intense pain. The temperature range was of the typical pump handle type, pulse weak and thready. The hip joint was markedly distorted, being flexed and adducted to the superlative degree. One could not get near the bed. Merely touching it would make the child cry out in pain. It was a pitiful case and it looked as if the child would die. An x ray examination made at this time showed a widened joint space and osteomyelitis of the neck of the femur. The joint was then exposed through anteroposterior incisions and the cavity thoroughly irrigated with normal saline. A through and through drainage tube was inserted. Adhesive straps were applied to the thigh for weight traction and a plaster of Paris cast from the thorax to the toes was applied. A window was cut in the cast for dressings. The next day, the child was free from pain and rested quietly. The temperature dropped gradually and in two weeks one could scarcely recognize the child, he had improved so remarkably. This case teaches that adequate drainage, fixation and traction should never be forgotten.

Another case of acute arthritis of the hip developed in a child five or six years old upon whom a radical mastoid operation had been performed for acute mastoiditis and sinus thrombosis. The temperature continued high, even after this operation, ranging from 103° to 106°. The child was decidedly septic and the blood revealed streptococcus hemolyticus. He suffered extreme pain in the right hip. The examination revealed a sensitive hip joint held in a flexed and adducted position by marked spasm of the surrounding musculature. A diagnosis of metastatic arthritis of the hip was made, from the suppurating focus in the mastoid. The radiographic examination of the joint was negative. No fluid was obtained by diagnostic puncture. The hip was immobilized by sand bags and five pound weight extension was applied to the extremity. The temperature came down to normal, pain diminished and disappeared altogether at the end of ten days. In three weeks the child had entirely recovered both from the mastoid and hip complication. An acute arthritis of the hip following acute mastoiditis is an unusual complication.

Neglected, the probable course of this case would have been a destruction of the joint cartilage, with ankylosis and deformity. One must never overlook the fact that Nature in her effort to splint an in-

flamed joint by inducing a state of spasm in the muscles, forcibly approximates articular surfaces, causing adhesions or destruction of cartilage and bone.

Another child in the wards of the hospital at the same time, aged ten years, had a bilateral pathologically dislocated hip joint. During the epidemic of 1918, a bilateral panarthritis developed following influenza. Unfortunately, he was held back too long, and by the time the surgeon was called in there was already a pathological dislocation. Both hips had to be opened and drained. He had draining sinuses which finally closed after eighteen months. Three years later, I operated upon his right hip joint to correct a vicious deformity. Just recently, a sinus opened leading to the left hip. This case is an illustration of belated surgical intervention.

PREVENTION AND TREATMENT OF DEFORMITIES

Acute polyarthritis of metastatic origin is usually treated in the medical wards and whether the cause be the gonococcus or the staphylococcus, influenza bacillus or any other pyogenic organism, it is a familiar observation to note that the treatment consists mainly in the administration of drugs, vaccines and local sedatives. Very little, if any attention, is paid to splintage and extension. The usual termination of this disease is for all the joints to clear up except one, which usually becomes ankylosed in a faulty position. The hip joint, for instance, becomes pathologically dislocated in a position of flexion and adduction, the upper margin of the acetabular cavity is usually eroded and permits the femur to be displaced upwards and backwards on the ilium. The knee usually assumes a pathologically flexed position held so by accomodative contraction of the hamstrings and posterior ligaments of the joint. The destruction of the cartilagenous surface contacts bone to bone, which leads to a bony ankylosis. From a preventive viewpoint, fixation and extension should always be applied to the joints of the lower extremities when acutely or chronically inflamed. If ankylosis be the inevitable outcome, they are then in the best position for weight bearing.

If the limb be already deformed, corrective measures can be employed either in stages without anesthesia and an application of casts or the deformity can be corrected, under an anesthetic, by manipulation and the division of shortened tendons and ligaments. I have treated a series of pathologically flexed knee cases at the Philadelphia Hospital. These I corrected by manipulation without anesthesia and the application of casts.

A word in connection with the removal of infected foci in the treatment of acute infectious arthritis. Patients must be carefully prepared for the removal of these foci, even waiting some time until a greater resistance has been acquired through building up, rest, diet and tonic medication, before subjecting them to a large dose of toxins when they have already been seemingly overwhelmed.

The joints during an acute flareup should not be baked, massaged or manipulated, because they themselves may be the foci of infection. Protection, warmth and any application which gives local relief, is indicated.

In conclusion, I want to make a plea for more complete cooperation between the general practitioner who first sees these cases and the surgeon. There are too many cripples walking the streets today, who, had they secured the proper treatment at the right time, would have been spared the tremendous handicap forced upon them by belated treatment or crass negligence.

2017 Pine Street.

TREATMENT OF COLON BACILLUS INFECTIONS OF THE UPPER URINARY TRACT WITH AUTOGENOUS VACCINE

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A review of the literature on the subject of autogenous vaccine in the treatment of colon bacillus infections of the upper urinary tract is rather scant and few conclusions can be drawn as to the results obtained. It has been generally admitted that vaccines, including autogenous vaccines, in streptococcus and staphylococcus infections of the urinary tract have not yielded results good enough to warrant their use as a standard method of treatment. This is not true, however, when the colon bacillus is responsible for the infection.

Colon bacillus infections in the urinary tract are by far the most common and it occurs much more frequently in women than in men. It may be found confined to the bladder, to one kidney and the bladder, or to both kidneys and the bladder. The bladder being affected in all cases, there are always symptoms which go along with cystitis.

Routine culture from the catheterized specimen should be obtained, including a culture from both kidney urines. If the culture shows colon bacilli with streptococci or staphylococci, an autogenous vaccine will not produce the results that it will when the cultures are pure Bacillus coli. When such mixed infections occur, autogenous vaccines, lavage of the renal pelvis on the side infected, together with the removal of foci of infection such as infected teeth or tonsils will undoubtedly produce good results.

TECHNIC OF TREATMENT

I desire in this paper to discuss the method of treatment in cases showing a pure culture of colon bacillus with the report of some typical cases. The vaccines used are made from the patient's culture showing the colon bacillus, with a dilution of one billion to the c.c. The best results are obtained with large doses beginning with 0.5 c.c. injected intramuscularly either in the arm or the buttocks, repeating the injections every five or six days, doubling the dose each time until it has reached two c.c. From eight to ten injections are usually sufficient. I have tried the customary method of giving smaller doses over perhaps a longer period of time and with discouraging results. Larger doses of the autogenous vaccine adminstered every five to six days have given excellent results.

REPORT OF CASES

Case I.—Female, aged twenty-six, married, referred by Dr. Neider, February 28, 1923, complain-

ing of marked frequency of urination associated with severe hematuria. The patient had had symptoms of bladder involvement with two former attacks of hematuria since her confinement some twelve months before, having been perfectly well previously. Cystoscopy showed a severe cystitis with a small bleeding ulcer midway between both orifices. This was fulgurated to check the bleeding. The culture of catheterized urine showed a pure growth of colon bacillus. An autogenous vaccine was made and administered every six days by her physician, using the dose outlined above. After the last few injections she was entirely well and now, six months later, she states that she has no symptoms and has had no recurrence of bleeding from the ulcer which was undoubtedly caused by the infection.

Case II.—Female, aged forty-seven, married, referred by Dr. Skinner, complaining of frequency and urgency of micturition with the history of having had the condition for about five years. Cystoscopy and ureteral catheterization showed pure colon bacillus growth which was confined to the bladder sample. An autogenous vaccine was made from it and treatment given in the same manner and almost immediate results followed. The patient received nine injections. She was considerably improved after the third, and after the last injection the patient was free from the symptoms and now three months later she states that the symptoms are absent.

Case III.—A female child, aged seven, seen April 17, 1923, in consultation with Dr. Butler and Dr. Hatch, of Penn Yan, N. Y., complained of obscure symptoms which began with a distended abdomen and a fever ranging from 100° to over 105°. There was also vomiting. The child did not complain of any particular urinary symptoms except that the attending physician found considerable pus and a few red blood cells in the urine. Blood culture and a Widal test were negative. A leucocyte count was 16,000. There was some tenderness elicited over the right kidney. Cystoscopic examination under general anesthesia showed a typical colon bacillus cystitis which was principally confined about the right ureteral orifice. Both ureters were catheterized and cultures made from each sample. The right kidney urine showed a positive growth of pure colon. Autogenous vaccine was immediately made and administered within forty-eight hours, using somewhat smaller doses gradually working up to one c.c. The child was given eight injections by Dr. Butler and a remarkable recovery followed. In a letter from the child's mother, July 13, 1923, she stated that the child was perfectly well in every way.

Case IV.—Female, aged fifty, married, referred June 12, 1923, by Dr. Wilkin, of Rushville, N. Y., with a complaint of frequency and urgency of micturition, loss of weight and general weakness. The patient's trouble had begun about last December when she noticed that she had to get up about three times at night to void. She had lost fourteen pounds from December up to the present time and appeared rather weak. She had also had several chills. The patient had had tuberculous glands removed from the neck a few years ago, and with an additional family history of tuberculosis, every effort was made to rule out a tuberculous lesion. There was none found. A catheterized sample of urine showed it to be filled with pus cells and a few blood cells and a pure culture of colon bacillus was obtained. The cystoscopic examination showed a severe cystitis principally in the trigone. Culture from the right and left catheterized samples showed the same infection in both kidneys. An autogenous vaccine was made, and administered by her family physician, using the method outlined, and the patient has completely recovered from her symptoms. On July 13th the patient called at the office and a sample of urine showed negative findings. The patient is gaining in weight and strength. The only additional treatment in this case was the removal of several abscessed teeth.

CONCLUSIONS

1. Infections of the urinary tract due to colon bacillus can be completely cured by autogenous vaccines.
2. Larger dosages are recommended.
3. The interval between injections should not exceed five to six days.

14-18 Schnirel Building.

Treatment of Scarlet Fever by Eucalyptus Oil and Carbolic Oil Versus Isolation.—G. Gushue-Taylor (*Lancet,* September 8, 1923) shows that the use of eucalyptus oil applied to the skin, and of carbolic oil to the throat in the treatment of scarlet fever does not prevent the occurrence of return cases, does not prevent the infection from spreading to susceptible patients and attendants during the course of treatment, and does not prevent secondary complications. The number of return cases varies inversely as the length of the period of detention, when this period is up to about eight weeks. In all cases of scarlet fever the patients should be isolated for at least eight weeks. They should not be allowed to mingle with other children until the ear, nose, and throat appear healthy.

Treatment of Hay Fever, Asthma, and Other Manifestations of Allergy.—W. W. Duke (*American Journal of the Medical Sciences,* November, 1923) says that the numerous manifestations of allergy, such as hay fever, asthma, dermatoses, gastrointestinal, urological, and neurological symptoms, urticaria, angioneurotic edema, and hypotension, can be treated along five lines, namely, avoidance or removal of the specific cause, avoidance or removal of contributory causes, specific protein treatment, nonspecific protein treatment, and symptomatic treatment. The first is to be preferred when possible. Specific protein treatment is best when the specific cause is known. When the specific cause is not known or cannot be removed or treated specifically, nonspecific protein treatment is worthy of trial. Adrenalin, pituitrin, and atropine are useful symptomatic remedies, well adapted for emergency and temporary use. Good results are obtained in hay fever and asthma through the subcutaneous use of pollen extract combined with local applications of pollen extract to the conjunctivæ and nasal mucous membrane.

Historical Medicine

Medicine and Philosophy in Virgil

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If one were to make an examination of the libraries belonging to those who have loved classical literature it is probable the most defaced and dog eared book in the majority of them would be found to be a Virgil. Among those who had long since passed the climacteric of life it might be a Horace. He would often hunt his friend close for second place. There are no such libraries now of course even put up at auction to close an estate, but notwithstanding the decay of the culture which found its joy in such bibliomanias, the modern historian of thought, if for nothing else, can hardly fail to find an interest in Virgil. He can hardly escape the curiosity to know just why Virgil sank so deep into the minds of men long after the glory of Augustus and the kindness of Maecenas had sunk with them into the tomb. For a while doubtless it was the marvel of his verse that endeared him to the men of the golden age, but that quickly passed into the silver age and that as quickly into the one merely of brass and junk. Yet Virgil's verse lived on, beyond Seneca's time even, a little obscured it is true by the fog and dust of a crumbling civilization, but nevertheless the model of the schools. As to this who can wonder who has learned to love the measured beat of his lines, but there was more to Virgil than this, more even than the splendor of his art in its higher functions. In the mire of the Middle Ages he lived still, clear up to the Renaissance, when he came into his own again by the magic of his art. It takes a high culture to feel the warmth the rays of such a luminary emits and even Comparetti (1) has not succeeded in making it clear to us why he was a necromancer and a wizard of knowledge, a scientist who knew the causes of things hidden from the best of the brethren of cloister and cell, even from those who knew how to write, who were the propagandists of the faith of a new civilization yet to arise. They could not have culled much magic, medical least of all, from the scrolls, but nevertheless there is in his works ample trace of a knowledge of the primitive life which existed long before the glory of Greece and the glow of its reflection in the Rome of Virgil's day. This may have had a sympathetic affiliation with a world again in ruins.

The modern ethnologist will here and there recognize primitive magic in a setting strange to him, one whose magnificence possibly the culture he himself has attained will not suffice for him to recognize, but the records of the primitive age of every civilization we know of, so far as its fundamental principles are concerned, may be discovered there, serving as the materials of Virgil's art, for those records infinitely varying in detail are essentially the same wherever we meet them and they cluster around a pantheism which lies at the root of much of our own metaphysical beliefs. Possibly even these are so worn threadbare in the thought of the modern reader that he will toss the book from him, but if the ancient monk had no more appreciation for Virgil's art than the modern scientist, and who could have less? if the music of the lines made no appeal to him, nor the nobility of the images they evoke, the old mumbler of paternosters may have chanted them to himself as invocations to a saint who had value in the Christian's hierarchy. Those in which are recorded the sacrificial rites Æneas uses to honor the manes of his father hark back to a past in which both archeologist and ethnologist meet.

> ". . . magna medius comitante caterva
> hic duo rite mero libans carchesia Baccho
> fundit humi, duo lacte novo, duo sanguine sacro,
> purpureosque jacit flores ac talia fatur:
> 'salve, sancte parens,' iterum salvete . . ." (2)

Barring the purple flowers, of the poet's touch, the wine and the milk and the blood, two bowls full of each, poured to Bacchus and the other deities and the chant to the sainted father would have its appeal to the mediaeval monk as well as to the African savage medicine man, *"medius comitante caterva,"* the central figure with the whole world following and looking on. Was this too not something for those who led the processions to the shrines in the middle ages to think upon?

The modern scientist sees the blood sacrifice and his mind travels back, if he is an archeologist or historian, along that ghastly trail and beyond to human sacrifice. It lingers with the multitudinous observances of many modern tribes with which it may still be seen to be woven. But there is more still in Virgil than that, for as the monk reads, as the scientist reads, if he has been brought up as he should, which he isn't today, the cadence of the lines, the measured alliteration, the images of beauty that fill his mind's eye drive him along to other worlds. As for the classicist he never gives the magic, the unmistakable track of the cave man, a thought. He swims along oblivious to all the traces of primitive magic, but we can not afford here to let Virgil's enchantment, his real bid for the wizard's wand, beguile us to that extent or we will lose many a hint as to the folk medicine of Virgil's day.

Among the first lines (1.50) in the first Eclogue we find the shepherd cautioned he must see to it not alone that no strange food lies in the way of his fat young flock but he must beware of the contagion of some neighboring herd:

> "nec mala vicini pecoris contagia laedent."

Upon this line I have dwelt before, comparing it with certain expressions of Varro, Columnella and Seneca, which warrant, so the original collators of them venture to suggest, the very strong inference that the conception of minute animalcules as the etiological factors in disease was in existence. An attentive study of the materials for a history of thought will reveal numerous demands for theories and discoveries which were more exactly formulated

or actually achieved only after ages, during which instances such as this from time to time are visible on the surface in the records remaining to us. Lucretius (16) seems to accept the view I have alluded to, though I am not sure the passage is entirely free from ambiguity; "Many living things in the food which bring disease and hasten death, atoms so small their contact can not be avoided which pass into the nose and air tubes." There is further on in the same book reference to pollution of the air by living matter causing infection among men. The necessity the human intellect had for the minute divisibility of matter brought into being the abortive atomic theory of Leucippus and Democritus, with which antiquity worked as best it could until Dalton, a century or so ago, placed it upon a higher plane of usefulness. This is quite aside from the accuracy with which it in the final analysis presents its scheme of nature. It is a pragmatic demand the mind makes confronted by a mass of nonabsorbable material. It does not demand a true theory, but one that works, and that demand, slumbering perhaps for a thousand years, lights up again and again, if the facts on which it is based continue to obtrude themselves at intervals, until some arrangement can be made which relieves the mind for a time of their intrusion. Necessarily the vast majority of facts in existence at any one time, rapidly become mere junk. They may be the truth, snow white and impeccable, but unless they fit in with some orderly and compact package of theory so the mind can pack them away in the smallest possible cranny of consciousness, they perish, perhaps to undergo metempsychosis and appear again, but for all practical purposes they are dead. Go into the stack rooms of the libraries and you will see their coffins mouldering on the shelves for a lack of demand, millions of them.

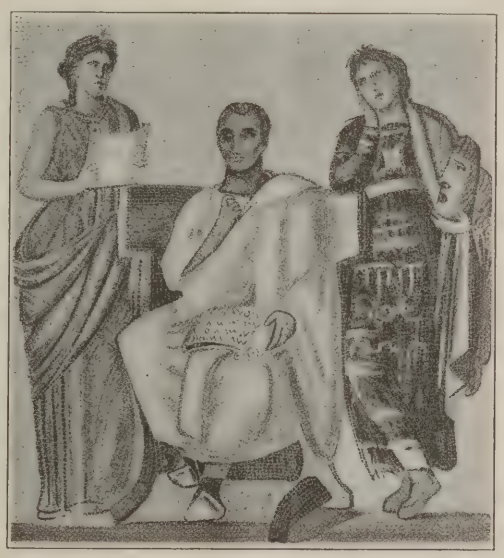


FIG. 1.—Reproduction of a mosaic found at Susa, in Tunis, the Adrumetum of Roman Africa. Virgil is seated between two Muses. One is reading a scroll, the other, clad in a comedienne's robe, is holding in her hand a stage mask. The poet has on his knees a manuscript on which one can make out a verse of the Æneid (1.8.): *Musa mihi causas memora quo numine laeso.*

The verdict for the contagiousness of phthisis was demanded by circumstantial evidence many generations before Koch discovered his germ. The germ itself of the idea existed in men's minds, before the time of Virgil, as we have seen, and long after him Bruno had it, three hundred years before Pasteur; others too, I know not how many, but some of them getting the conception from Lucretius and the ancients, no doubt. We can hardly imagine a time when the facts of contagious disease did not press for solution, whether among the swarms of men or in the herds of sheep that graze in Virgil's pastures. They were always knocking at the door of the mind for admission. More than two hundred years elapsed after you could see the animalcules which filled the minds of the ancients on whom Virgil leaned, before it occurred to some one, no one knows exactly who even now, to build a theory that worked for a generation and has now become one of the processes of disease, despite the blunders of Koch's postulates, and we are looking in other directions for the "cause."

"Felix qui potuit rerum cognoscere causas," Virgil sighed, probably after having read Lucretius. We are only successful when the "causes" become processes. Virgil would not have been happy, for the "cause" constantly recedes, but was he not aware of that or was he only as silly as the men of science who sigh at the thought the "causes" of disease have now become known for the first time, in their generation and by their Herculean labors?

It is, however, profitable, historically speaking at least, to look upon the progress of thought as the result of a law of supply and demand, but like many of the laws of nature it seems to work with an enormous waste both of materials and of energy, this machine of the gods which converts "causes" into processes.

Not until there arose out of the edifice founded by Pasteur and Lister and Koch a demand of the human intellect for some more efficient carrier of contagion than the air, a vehicle in use since Virgil's day, was the intermediary between the receding "cause" of disease, the germ, and the disease itself discovered; the mosquito, the louse, nay man himself. The carriers of disease, are they not "causes" too? Air with something wrong with the pneuma in it was once a cause of disease, and some of us still surviving are old enough to remember when sewer air was the cause of it and then the carrier of it, until the robust man who cleaned the sewers laughed us out of the notion, and that "cause" went grumbling down the aisles of time. In my visions of the past I still see a loved instructor of mine, a learned professor of the practise of medicine, berating, with swollen veins on his temples and a flush on his cheeks, an hotel clerk who was appalled at his indictment by the irate man of science. He had given him a room with a wash basin connected with the sewer in it. In the excited language of the endangered guest, this clerk must have sent hundreds thus to their doom. My irascible friend has long since paid the debt he owed to nature, but he did not die from sewer gas poisoning. It is not necessary to point out how much is true or how much false in the once exploited alarm about sewer gas. It was a theory that rapidly arose as house plumbing had come to be universal. It worked in so far at least that it stimulated care in sanitary precaution.

If bad air, either ancient or modern, was the passing phenomenon of misdirected etiological theories, if we have rejected it as the carrier of infection, we are in ardent pursuit still of the carrier. We have

ceased to worry about or have much use for "causes" and perhaps the readjustment of ideas as to them is one of the chief, perhaps it will be a permanent, advance over ancient ways of thinking. When Virgil, who knew of the contagion in the scab of sheep and who probably came to know from Varro, or from the same sources as Varro and Columnella and Seneca afterwards did, of the theory of animalcules as the causes of disease, wrote the Culex he was but a boy. It was the gnat or the buzzing mosquito, which after two thousand years was to be dragged forth from his obscurity into the sequence of the phenomena of disease in man, and which was no doubt in his day as in ours carrying infections over the Campagna, but he fits the mosquito into the pantheism of his time and makes it an instrument in the hands of God.

In a very remarkable production for a boy of sixteen or seventeen he weaves this philosophy with much elaboration of other beliefs into a very pretty little tale, speaking in his favorite rôle of shepherd. He tells how its buzzing annoyed him and how its sting awakened him from his sleep on the grassy banks of some stream, and saved his life from the venom of a snake stealing upon him, but a blow of his hand had killed his benefactor before he knew of his danger. The sinister importance into which the mosquito has swelled for us tends to make perfectly absurd the pathos which fills the concluding lines of the poem recording the gratitude of the shepherd who performs the funeral obsequies:

> "parve culex, pecudum custos tibi tale merenti
> funeris officium vitæ pro munere reddit." (11)

If we shall find Virgil alive to the mystic influences of the pneuma in the physiology of living creatures we can see only here and there that this thought with him extends also to morbid conditions. For him as for my friend it was an air borne infection. Rather better than in the bucolics it is seen in the Æneid (4). Æneas tells Dido of his experiences in Crete. When he was busy there regulating the affairs of the inhabitants, "suddenly a plague of sickness and a death laden season fell upon their bodies and upon the cultivated fruit trees as well, a pitiful time due to the state of the atmosphere they inhaled." We might think this a reference to bad weather conditions in common parlance just as we shall see as to the supposed cause of the "scab" in sheep, but it is not, it is in the Hippocratic sense. The idea of air borne disease of this kind rested on essentially a mystic conception, that of some derangement in the pneuma in the atmosphere and it is this we must read into the *"corrupto caeli tractu."*

This is brought to our mind by what Æneas learns later from his father Anchises in Hades. This divine affluence animates all creation. "There is a fiery force of celestial origin in the seeds of living things so far as their bodies are not clogged with noxious principles and their earthly forms and mortal limbs do not languish" (5). These ills of the flesh have an ethereal origin for the soul does not at once shed them when it flees beneath the earth to Hades. There, like their sins, they have to be expiated, worn away by various purgations and purifications, before the soul is free of them. We see here then corporeal sin and moral sin, disease of the soul and body closely allied. In both it is the impurity in the pneuma, in the divine affluence which must be purged away in Purgatory or Hades, its prototype.

(To be concluded)

Contributors to the Science of Medicine

SIR WILLIAM OSLER, Bart.

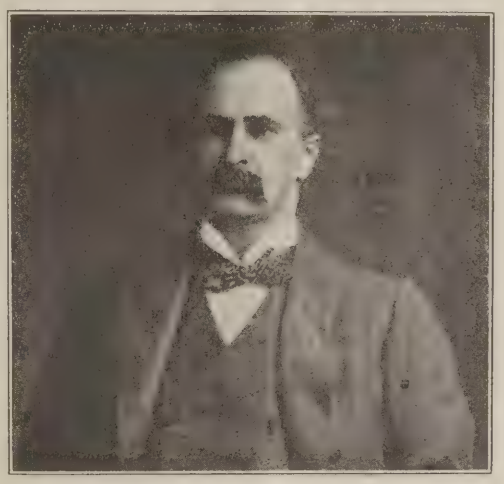
Once when Sir William Osler was asked to make an address at a service for the students of the University of Edinburgh, he chose as his subject Man's Redemption of Man, and as his text the following passage from Isaiah: "And a man shall be as a hiding place from the wind, and a covert from the tempest; as rivers of water in a dry place; as the shadow of a great rock in a weary land." Perhaps no passage in all literature is as fitting as this one, which he himself all unconsciously chose, to describe what this great man meant to those who knew him.

William Osler was the eighth of nine children. He was born in 1849 at Bond Head, Ontario. His father, Featherstone Osler, with his wife had left Falmouth in 1837 and come to Ontario to settle. William was graduated from Trinity College, Toronto, in 1868 and received his medical degree four years later from McGill University, Montreal. Following his graduation he spent two years in study abroad, returning in 1874 to Montreal, where he became professor of the Institutes of Medicine at McGill. Thus at the age of twenty-five he filled a chair covering both pathology and physiology, a position which he held for ten years. In 1884 he accepted a post in the University of Pennsylvania, and five years later was called to Baltimore as professor of medicine in the then newly established Johns Hopkins Medical School. In 1892 he was married to Grace Revere, a descendant of Paul Revere. He remained at Johns Hopkins for sixteen years. In speaking of this period of his career, Harvey Cushing writes: "It was the Golden Age of Johns Hopkins during the presidency of Daniel C. Gilman, and during this period through his writing and teaching Osler became recognized, one may say without exaggeration, as the most eminent and widely influential physician of his time." In 1904, when he was fifty-six years of age, he accepted the Regius professorship of physiology at Oxford, which was the most honorable post that the United Kingdom could offer. Throughout his whole life at Oxford, he and Lady Osler kept open house, especially for Canadian and American students, and

were so cordial and hospitable that their home won the name of "Open Arms." They entertained successive groups of students weekly and it was said that Osler never forgot a name.

Osler was a fellow of Christ Church, Woolsey's College; a member of the Hebdomadal Council, a curator of the Bodleian Library, a delegate of the University Press, a member of the Samuel Pepys Club, of the Roxburghe, the Colophon, the inner circle of the Royal Society, and the Johnson Club. At one time he held the office of president of the Classical Association.

He traveled a great deal, usually accompanied by some students, and his notes, letters and even postcards, written to acquaintances and friends, contain some of the most charming, interesting and witty specimens of his writings. Cushing characterizes him as a writer *par excellence* of countless brief missives, containing some characteristic message, quip or epigram worth preserving. Of his scientific writings, the best known is his *Principles and Practice of Medicine,* which has gone through nine editions, and still remains probably the most used and most useful book in medicine today. It has been translated into French, German, Spanish, and Chinese. The bibliography of his works contains more than 730 titles. Among these are some of the earliest discussions on the blood platelets; descriptions of the visceral complications of erythema multiforme, multiple telangiectasis, and chronic cyanosis with polycythemia and enlarged spleen; special monographs on the cerebral palsies of children, chorea, abdominal tumors, angina pectoris, and cancer of the stomach; his description of the erythematous swellings (Osler's spots) in malignant endocarditis is well known. Among his contributions to historical medicine are his essays on Linacre, an Alabama Student, and Servetus. He was editor of *Modern Medicine.* His clinics at Johns Hopkins were noteworthy for students of malarial fever by Thayer, of amebic dysentery by Councilman and Lafleur, the finding of the microorganisms in gonorrheal endocarditis and septicemia by Thayer and Blumer, the studies of eosinophilia in trichinosis by Thayer and Brown, the demonstration of sexual conjugation in malarial parasites by MacCallum and Opie, and the study of pneumothorax by Emerson.



SIR WILLIAM OSLER

Unfortunately the best known incident of Osler's life, at least to the layman, was that connected with the quotation about "chloroforming all over sixty." This remark, quoted in a spirit of jest from one of Antony Trollope's less known novels, *The Fixed Period,* was made in the course of his farewell address to his friends and colleagues in Baltimore, many of whom were over sixty, an age which he himself was approaching. Most unhappily the press heartlessly singled out and featured as good copy the one remark about chloroform. The notoriety of this incident, coming as it did upon the eve of departure from America, was most painful to Osler, but he wisely refrained from making any reply.

His Ingersoll Lecture on Science and Immortality is typical of his intellectual keenness, as well as of his charm of style. The story is told that he could not find time for the preparation of this lecture until a few days before it was due. In desperation, he slipped away one night to New York, and there in the University Club wrote the lecture in a single morning. In it he makes his own confession of faith —that he would rather be mistaken with Plato than be right with those who deny life after death.

His death at the age of seventy was probably a consequence of the war. Although no man ever hated strife and conflict so much, nevertheless he made himself enter energetically into many war activities—committees, hospital work, and as senior consultant to the forces, for which duties he received a colonel's commission. Many believe him to have been the writer of the British reply to the well known German professional note issued early in the war. His only son, Revere, who was also a hater of strife, underwent training as a field artillery officer, was commissioned lieutenant, and, after serving bravely in France for a year, was mortally wounded at Ypres, and lies buried in Flanders Field. His father never recovered from his boy's death. Though outwardly unchanged, he suffered greatly from insomnia and his health became undermined so that he succumbed to the return of an old ailment, bronchial trouble, which developed into pneumonia, one of the complications of which made an operation necessary, from the effects of which he died on December 29, 1919. One of the best and most interesting biographical sources on Osler is the July, 1919, number of the *Johns Hopkins Bulletin,* composed of contributions by a number of his former pupils and colleagues in Baltimore. This was published to celebrate Osler's seventieth birthday and came as a great surprise to him, who was averse to all public testimonials and adulation.

Osler's dominant characteristic was undoubtedly his broad humanity. This showed in his teaching; his friendships with high and low, young and old, colleague and pupil; in his speeches and writings; and in his wide and inclusive scholarship. In his last address, made as president of the Classical Association, entitled The Old Humanities and the New Sciences, he made a plea for no human letters without science, and no science without human letters. He once stated that his three ideals for himself were to do well the day's work, to live out the Golden Rule as far as possible, and to cultivate a degree of equanimity that would enable him to bear success with humility, the affection of friends without pride, and to be ready when the day of sorrow and grief came to meet it with the courage befitting a man.

Editorial Articles

MEDICAL PROGRESS IN 1923

Activities along the lines of public health work were perhaps the most notable contributions of the year 1923 to medical science. In their annual summary of progress of the year, the *Nation's Health* calls the passage of the New York act for State aid to local hospital, dispensary, nursing, laboratory and other public health services "one of the really epoch making pieces of legislation in the history of public health. . . . This legislation is not only of unique significance in itself, but it is also memorable as the last great contribution of Dr. Herman Biggs to the cause of sanitary statesmanship." Mention is also made of the creation in the United States Public Health Service of an office of administrative health practice where full data as to the organization and administrative procedure of the health departments of the country will be collected and kept on file for reference. Another step for promoting the progress of city health services was the appointment of Dr. Rankin as director of field service to advise municipal officials as to the development and standardization of their work.

In school hygiene probably the most important contribution of the year was that of Dublin and Gebhard, published in the *Journal of the American Medical Association,* contesting the opinion that malnutrition usually causes underweight children, by showing that clinically undernourished children are in many cases not underweight. In industrial hygiene, probably the most notable contribution was that made by Aub and his associates at Harvard on the pathology of lead poisoning. A study of dust as a contributory cause of tuberculosis was continued intensively at Saranac by Dr. L. U. Gardner and others. Related studies of importance were those made by the New York State Commission on ventilation, published by Dutton, and Vernon's researches in England on the effects of high temperatures and humidities, and also those conducted by the United States Bureau of Mines, the Public Health Service, and the Society of Heating and Ventilating Engineers at Pittsburgh.

Distinct advance has been made in vaccine and serum therapy. The Schick test and the toxin antitoxin immunization have been proved invaluable in the control of diphtheria, and work along these lines has assumed vast proportions. Dr. Park's use of the first injection of toxin antitoxin made subcutaneously instead of the Schick test was a significant contribution to this form of serum therapy. Dreyer's defatted vaccine for tuberculosis and the development of sera for the treatment of pneumoni were other procedures that aroused great interes in the medical profession.

In the realm of etiology advances were not s notable, but Robertson's researches of the effect of atmospheric temperature upon the prevalence o fleas parasitic upon rats and hence upon the inci dence of bubonic plague should be mentioned. Als evidence has been collected and published showin that the streptococcus is probably a causative agen in scarlet fever.

Studies and investigations of the previous yea that have been more fully demonstrated and prove valuable during 1923 are the investigations of Olit sky and Gates on the causative organism of influ enza, and, first and foremost, the discovery of Bant ing and Macleod of the value of insulin in th treatment of diabetes.

BLOOD PRESSURE AND TOXEMIA

High blood pressure, concerning which much i heard nowadays, may be influenced, perhaps largel brought about, by toxemia. Intestinal toxemia, th result of long continued constipation and disordere digestive functions, perverted metabolism, may be th cause, or at least a contributory cause, of hyperten sion and hypotension. That high blood pressure i frequently of toxic origin is the belief of many car diologists. This seems reasonable. According t Alder (*Schweiz. med. Woch.,* 1921, 51, p. 713), unde the influence of infections proteinogenous substance may be formed in the blood, capable of inducin spasm, similar to those which culminate in th eclampsia of pregnancy. Under ordinary circum stances they are dealt with by the liver, but whe the liver suffers as the result of infection, these sub stances accumulate in the blood, and high bloo pressure results from spasm of the arterioles. Th effects of toxemia are most apparent in the kidneys by reason of their vital importance, the manifesta tions produced thus forming only one symptom o the general poisoning. Langdon Brown, in his boo recently published on the *Sympathetic Nervous Sys tem in Disease,* points out that intestinal stasis fron sympathetic inhibition causes poisons of putrefactiv origin to be absorbed, which in their turn lead t vasoconstriction, and hence an unduly raised bloo pressure. Bishop, at the seventeenth Internationa Congress of Medicine, held in London in 1913, ad vanced a conception of a general cellular disorde

om which few cells of the body are exempt. The eart, bloodvessels, liver and kidneys suffer conicuously because of their importance and activity, nd because of the extra strain to which they are put y cellular damage. The rationale is that a reactive ritation is set up against some material with which ie cells have to deal in the processes of cellular utrition, and that this irritation, which is in the ature of an anaphylaxis, leads to cell injury with ltimate destruction and replacement by fibrous tisue. The extraneous material is believed to be a rotein or protein derivative from ordinary food. uch sensitiveness dates usually from some acute lness, from shock or great emotion or from acute ood poisoning. Thus, as Halls Dally has pointed ut in his book on high blood pressure brought out short time ago, although no one factor can be ointed to definitely as the source of origin of abormally high arterial pressure, and it is highly robable that more than one source exists, a mass of vidence has been adduced based on the hypothesis iat the majority of cases of hyperpiesis are in realy due to toxemia arising from infective or autoenetic sources. The results of treatment are rongly in favor of this view.

In the consideration of high blood pressure the ndocrine glands must be borne in mind, but of this art of the subject enough is not known to speak ecisively or dogmatically. Yet enough is known o state that the endocrine glands and the sympaietic nervous system act and react on each other, specially the adrenals, and may have a great deal o do with high blood pressure. It may also be sugested that long continued intestinal toxemia may rejudicially affect the working of one or other or iore of the endocrine glands disturbing their harionious action and interaction essential to good ealth and may be the cause of an unduly high lood pressure.

If alimentary toxemia is a leading factor in the roduction of hyperpiesis, and evidence points that ay, the sensible treatment is to prevent constipaon and the other symptoms of gastrointestinal ouble from reaching the chronic stage. Careful ving and especially diet are perhaps the main preentive measures, plainer living than in these days e are accustomed to. However, therapeutic measres are indicated also. The gastrointestinal tract ust be rid as far as is possible of the material hich is poisoning the system and the functions of igestion and assimilation and peristalsis must be aintained in efficient working order. Also steps ust be taken to free the kidneys from the subances which are clogging their proper action. The nooth working of the urinary apparatus is quite as nportant as that of the gastrointestinal tract. In the checking and amelioration of high blood pressure of toxic origin it is essential that eliminaton and excretion be satisfactory, and elimination by way of the kidneys in particular.

THOSE INSIDIOUS SYNDROMES

Perhaps the most instructive papers which could be read in medical societies would be discussions of mistakes in diagnosis. Until the average psychology of *homo sapiens* has undergone considerable upward revision, however, we fear that such discussion will be infrequent. We do not undertake, with any degree of enthusiasm, the listing of our own errors, and of course our natural courtesy forbids the publishing of those of others. In short, if a physician reads a paper describing mistakes he has made in diagnosis, his colleagues are suspicious of his motives; if he reads a paper describing the mistakes he has seen others make, he is written down as a conceited ass.

But this does not alter the fact that mistakes are being made constantly, and the frank physician will tell you that much of what diagnostic acumen he possesses came from profiting by errors. These mistakes are naturally due to many causes, but possibly the most frequent cause of all is the insidious lure of the syndrome.

A patient is ill with fever. Our best physical examination does not reveal any cause for this, nor any localizing symptoms. Fever and some malaise, that's all. Immediately begins the urge to name it. The physician thinks of malaria or typhoid or typhus or other syndrome, according to the environment. There are several determinants of this anxiety to christen, this what we might call a nosophilia. One is the natural wish of the patient and his relatives to know the name of the illness. Immensely more comforting is the physician who says "O yes, you have a touch of malaria" or "You're threatened with typhoid," than he who frankly says he does not know the diagnosis. And then too there is the comfortable feeling of the physician himself when he thinks of a patient as having this or that definite disorder, as contrasted with the uncertainty of a deferred or unknown diagnosis.

But more potent perhaps is the method of teaching unfortunately too prevalent in medical schools. Let us take neurology for a paradigm. The instructor, after running briefly over some of the more common neurological symptoms, tremors, incoordination, disturbances of reflexes, etc., hastens on to syndromes. In every large centre of population there are available, usually, cases of multiple sclerosis, of syringomyelia, paralysis agitans, tabes, pro-

gressive muscular atrophy, and so on. These make excellent subjects for clinical demonstration. At the end of the school year the instructor has the contented feeling of having given a thorough course in his subject. Hasn't he shown the students some beautiful cases, patients who were veritable neurological museums?

Unfortunately, when the student later hangs up his shingle, these beautiful cases do not troop into his office. When he does get a patient who shows some neurological symptoms, these are likely to be extremely slight and confusing. He puzzles over them and, thinking of the various syndromes described so glibly in his final examination, he finally decides that the patient must have one of them, and proceeds on that theory. And then later he must revise his diagnosis or abandon it altogether.

The aim then of the instructor in the medical college should be, not so much to show classical, textbook pictures of disease, but to prepare the student to recognize departures from the normal, and their individual significance.

ACALCULOUS CHRONIC CHOLECYSTITIS

This affection is of frequent occurrence, but as yet has not been fully explained. It is characterized by a torpid inflammation of the walls of the gallbladder and the clinical symptoms are similar to those of calculous cholecystitis. Acalculous cholecystitis is not so infrequent as might be suspected, because out of a total of one thousand cases, Smithies found the acalculous form in forty-seven per cent., the calculous form in fifty-three per cent., while Henkel and Riedel give a proportion of only ten to twenty-five per cent.

The etiology of this morbid process is not clear. The puerperal state unquestionably exercises a marked action and many gravid cholecystitides are in no way related to biliary lithiasis. Chronic appendicitis frequently accompanies it. In all septic processes the pathogenic bacteria eliminated by the liver enter the bile and irritate the walls of the gallbladder when the bile stagnates in the viscus, hence there is a descending infection of the organ and it now seems probable, from recent researches, that ascending infection is not common, even if it occurs at all.

The inflamed gallbladder often forms adhesions with the surrounding viscera, while in size it may be larger than normal; it is rarely atrophied or contracted. The walls are thickened, the fluid contents are thick, cloudy, and greenish in color, while occasionally a mixture of bile and pus is found.

From the clinical viewpoint the most remarkable fact is the presence of extravesicular symptoms, gallbladder symptoms being very slight or even absent. The former consist of gastric or intestinal disturbances and usually a more or less marked change in the general health. The gastric symptoms consist of gastralgic crises and symptoms of motor hypersensitiveness. In most cases the symptoms of nervous dyspepsia are alone present.

The intestinal disturbances recall those of mucomembranous enteritis; the patient experiences general lassitude, sleeps poorly, loses flesh, and may even present a rise of temperature and chills, often arousing a suspicion of tuberculous infection. In a middleaged subject whose general health is disturbed without any appreciable cause, one should suspect a latent affection of the gallbladder and systematically explore that viscus.

The vesicular symptoms alone will allow the physician to make a diagnosis. These consist of a mild angiocholitis pain in the gallbladder and changes in the duodenal fluid removed by tubage. Angiocholitis is rarely wanting, although greatly attenuated and recalls the tint of familial cholemia. The conjunctivæ may sometimes be slightly tinged. The urine always contains urobilin and the feces are slightly decolorized at the time of the paroxysms.

The gallbladder pain may be found only by pressure over the organ, or the patient may present a true hepatic colic, but usually the patient only complains of a dragging sensation in the infrahepatic region.

Duodenal tubage is of immense value and when done after the subject has been fasting for twelve hours the fluid withdrawn will be golden yellow or brown, thin and transparent and free from any solid particles; it is neutral or alkaline, contains a few cholesterin crystals, some epithelial cells, and numerous bacteria. In cases of chronic acalculous cholecystitis or when calculi are present, the duodenal fluid is thick and viscous, cloudy, yellowish green, containing numerous polynuclears, and other figured elements.

The evolution of acalculous chronic cholecystitis is extremely slow. There are mild forms and serious forms with rapid emaciation and loss of strength. Occasionally there is suppuration of the gallbladder with all its consequences. The acalculous type may end in calculous cholecystitis and this is not uncommon. Naunyn, Mignot and Gilbert have demonstrated the infectious origin of biliary lithiasis, while Chauffard and his coworkers have demonstrated the formation of cholesterin calculi resulting from hypercholesterinemia from stasis. Also the researches of Moynihan, MacCarty and Gosset have shown that great attention should be given to a

traparietal origin of calculi. An infiltration of holesterin may occur under the intact vesicular pithelium within the cells of the mucous chorion. his lithogenous process is all the more likely to ccur the greater the chronic inflammation of the allbladder.

The differential diagnosis between acalculous ronic cholecystitis and chronic appendicitis must e made. The former process occurs mostly in omen between twenty and fifty years of age. adiography and duodenal tubage will confirm the resence or absence of calculi. When they are absent ie radiograph will be negative and duodenal tubage ill withdraw a normal fluid, and lastly, there is no ypercholesterinemia of the blood.

In the acalculous type of chronic cholecystitis, rotropin, oil of juniper and vichy water are the ost effective remedies and often result in an evident amelioration, but this medication must be continued for months or even years. If after a ufficiently prolonged medical treatment, no improvement is forthcoming, cholecystectomy will give satisfactory and lasting results.

THE EFFECTS OF ALCOHOL

In these days of pros and antis in regard to prohibition, it is refreshing and most helpful in judging he problem to find a scientific and authoritative eries of opinions on the subject. Such a series may e found in the volume, *The Action of Alcohol on Man*, by Ernest H. Starling, late professor of physiology at University College, London, with appended ssays on the subject by the well known authorities, Dr. Robert Hutchison, physician to London Hospital, who writes on Alcohol as a Medicine; Sir Frederick W. Mott, pathologist to the London County Council Asylums, whose subject is Alcohol nd its Relations to Problems in Mental Disorders; nd Raymond Pearl, Ph.D., of Johns Hopkins, who liscusses Alcohol and Mortality. The book is a recent publication of Longmans, Green & Company.

Starling, who writes the preface to the volume, states that his conception was that such a book, written from the purely scientific viewpoint, would make it possible to find material on which to base arguments for or against the use of alcohol. He himself is convinced that in a civilized society such as ours the abolition of all alcoholic beverages, even with universal consent, would be "a mistake and contrary to the permanent interest of the race. If it were enforced by legislation," he writes, "against the wishes and convictions of a large proportion of the members of the community, I believe it would be little short of a calamity. While it would not result in the long run in the improvement of national health and efficiency, it would diminish that respect for the law and that identification of self with the law which are essential for the stability and welfare of a democracy." Through more than half of the volume, Doctor Starling develops the reasons why he has arrived at the above conclusions. He believes that the whole question as to the effects of alcohol depends upon the distinction between use and abuse. "In moderation it is difficult to appreciate any harmful effects from its use, whereas, when temperance is abandoned and alcohol is used immoderately, its effects are evil and fraught with disaster to the individual and damage to the community." To sum up the conclusions at which he has arrived through his studies and investigations, he finds alcohol in many cases a valuable food, as, for instance, for diabetics, and for the old. As a drug, alcohol is always from beginning to end a depressant, not a stimulant. The narcotic action is sometimes of value in relaxing tension of the highest brain centres, in promoting repose and freedom from care and worry, in assisting digestion and assimilation, and as a restorative under certain conditions. On the other hand, alcohol is always injurious in its effects when taken immoderately or over a long period of time. Also, for the psychopath, for the man who has a weak nervous inheritance or who has suffered a head injury, *any* use of alcohol is immoderate, and the same applies to children and young people during growth, while the processes of control are being perfected by education and discipline.

Sir Frederick Mott's article gives some very interesting data and statistics on the relation of alcohol to mental disorders. He quotes Doctor Sullivan's conclusions regarding alcoholic influence in the production of certain evil social phenomena in England. Probably chronic alcoholism is the cause of a considerable proportion of the suicide of that country, and an important factor in the large increase in suicides during the last few decades. He concludes that chronic intoxication is responsible for about three fifths of the homicidal crime in England, and that, in rather less than half the cases of sexual crime, the causal condition is either chronic alcoholism or simple drunkenness. In crimes of acquisitiveness, alcoholism seems practically a negligible quantity. His general conclusions do not differ appreciably from those of Starling. Dr. Raymond Pearl finds that the consumption of alcoholic beverages in moderate quantity does not sensibly shorten the mean duration of life nor increase the rate of mortality as compared with that of total abstainers; but that the excessive use diminishes the mean duration of life and increases the mortality rate.

THE VALUE OF HEALTHY TEETH

Through the realization of the effect of dental conditions on health, and that the science of dentistry is not only palliative and curative, but definitely preventive, the Government of Great Britain has started the organization of a State and local dental service, to work in cooperation with the many clinics established by large industrial firms, and with a panel dental service that has already been established in various parts of the country.

A departmental committee was appointed not long ago to study and review dental conditions in the kingdom, and much interest has been aroused by their report, which states that at least one third of the general diseases of the people as a whole are due, directly or indirectly, to bad teeth and their consequences. An experiment was tried out at a school dental clinic at Cambridge. It was found that in 1908 only fifteen per cent. of the children had sound permanent teeth. In 1920, as the result of preventive care and treatment, these figures showed themselves as directly reversed—fifty-one per cent. of the children had sound permanent teeth, to say nothing of numerous other benefits accruing to their possessors, such as the avoidance of gastrointestinal disorders, glandular infection, anemia, and toxic states of all kinds.

At the last annual meeting of the British Dental Association, the president, Dr. George G. Campion, made a plea for the realization on the part of the dental profession of the fact that the place of dentistry in this new era of medical science is distinctly that of prevention rather than of treatment and cure.

OCCUPATION AND GENERAL PARALYSIS

Although occupation is not a primary cause of general paralysis, a study of its incidence in a group of workers is important as bearing upon its prevention, by showing what occupations may hasten its development in persons already infected with syphilis. Dr. Horatio M. Pollock and Dr. William J. Nolan have presented, in a recent issue of the *New York State Hospital Quarterly,* an interesting study of this subject.

This study included both males and females from all industries, who had been admitted to New York civil State hospitals during a certain period of time. In the female group, 71.5 per cent. of the patients had been employed in domestic and personal service. With due allowance for difficulties in classification, some very interesting estimates as to incidence were able to be made. The occupations having the lowest rate of general paralysis were, in the order given, mail carriers, laborers, porters, etc.; street car conductors, and persons in the printing and publishing industries. Among persons in occupations having a high rate were, in the order given, first, actors, with a percentage of 1,207.1 to 100,000; second, bartenders, with a percentage of 914.2; third, waiters, with a percentage of 767.4. The lowest in this group were the captains, masters and pilots, with a percentage of 304.71 to 100,000.

In recent years, the report states ,about twenty per cent. of the males and about five per cent. of the females who were first admitted to civil State hospitals have been cases of general paralysis. The deaths from general paralysis in these hospitals have been approximately twenty per cent. of the total number of deaths in the institutions.

Obituary.

SIR MALCOLM MORRIS, M.R.C.S., F.R.C.S., EDIN.

Sir Malcolm Alexander Morris, the well known dermatologist, died suddenly at Bordighera on February 19th, aged seventy-four years. He was born in London, the fifteenth child and youngest son of Mr John Camac Morris, F.R.S., of the Madras Civil Service. He received his medical education at St Mary's Hospital, and after he had qualified as M.R.C.S., he engaged in medical practice for a year but not liking the work went to Berlin and Vienna where he became especially interested in the diagnosis and treatment of diseases of the skin. Returning to England he was appointed clinical assistant to the Blackfriars Hospital for Diseases of the Skin and in 1879 published a *Manual of Skin Diseases* which ran through several editions. In that year too, he began to lecture on dermatology at St. Mary's Hospital and in 1882, having been admitted F.R.C.S. Edin., became surgeon in charge of the skin department of the hospital, a position he held for twenty years. He did much to raise the standard of the medical school of St. Mary's Hospital.

Early in his career Morris was particularly concerned with the treatment of lupus. Koch's discovery of the microorganism causing tuberculosis quickly attracted his attention, and he was foremost among those in England who appreciated its importance. He represented the National Association for the Prevention of Tuberculosis at the Congress which was held in Berlin in May 1899, and in 1901 he was secretary-general of the British Congress on Tuberculosis, at which Koch endeavored to show that essential differences existed between human and bovine tuberculosis. In 1901 he delivered the Lane Lectures in San Francisco.

He lectured for several years on dermatology at the London School of Clinical Medicine, and he was surgeon to the skin department at the Seamen's Hospital, Greenwich. He was honorary or corresponding member of the French, Italian and American Societies for the study of dermatology, a past president of the Dermatological Section of the Royal Society of Medicine, and a member of the International Council on Leprosy. Morris had a strong leaning to literature and was a facile speaker and writer. He possessed extraordinary energy and a peculiarly alert brain. In 1883, Messrs. Cassell and Co. published under his editorship *The Book of Health.* This was followed by two series of excellent manuals, the one dealing with physiology, pathology and comparative anatomy, the other with clinical subjects. In 1886 he was coeditor with Dr. M. Hays, of Philadelphia, Pa., of the *International Journal of the Medical Sciences* and from 1895 to 1902 he edited the *Practitioner.* In 1921, he edited, in association with Professor Langmead and Dr. Holmes, a three volume *Dictionary of Practical Medicine.*

News Items

Conference on Infant Welfare.—The third English peaking conference on infant welfare will be held in London on July 1st, 2nd and 3rd.

American College of Physicians.—At the annual meeting of the American College of Physicians, held in St. ouis, Mo., February 18th to 23rd, Dr. Harlow Brooks, of ew York, was elected president.

Memorial Meeting for Dr. Holt.—A special meeting as held at the New York Academy of Medicine, Wednesay, March 12th, in commemoration of the life and services f Dr. L. Emmett Holt.

Poughkeepsie Officials Want Hospital for Contagious iseases.—A movement is on foot in Poughkeepsie, . Y., to secure a city hospital for the treatment of conagious diseases. There is no place for the isolation and are of such cases in that city at the present time.

Dr. Park Elected to French Academy.—Dr. William . Park, professor of bacteriology and hygiene at the niversity and Bellevue Medical College, has been elected foreign member of the Paris Academy of Medicine.

International Society of Medical Hydrology.—A spe-al meeting of the society was held at the Royal Society f Medicine, London, on Wednesday, March 5, 1924. A iscussion on the treatment of tropical disease by waters nd baths was opened by Dr. Pierret, of La Bourboule, rance.

Free Dental Clinic for the Bronx.—The Northern istrict Dental Society of the Bronx is planning to erect s own free dental clinic, to cost $100,000. This is to replace ie present clinic, where 15,000 school children were treated st year. A rally to further plans is to be held at the oncourse Plaza Hotel on March 28th.

Gift to Northwestern University Medical School.—Irs. Robert L. Rea, of Chicago, widow of Dr. Robert aughlin Rea, for thirty years surgeon in chief of the ennsylvania Railroad, has given to Northwestern Univerty Medical School, Chicago, $100,000 with which to estabsh a permanent professorship in anatomy.

Schools to Retain Dental Clinics.—The Board of Eduation has rescinded its action abolishing dental clinics in ie city's public schools. Dr. John A. Ferguson, physician the Mayor, who made the original motion to abolish the inics, introduced the resolution yesterday to continue exting clinics as formerly, but to provide no new ones.

Friday Afternoon Lectures at the Post-Graduate.—he following Friday afternoon lectures will be given at o'clock at the New York Post-Graduate Medical School nd Hospital during the month of April: April 4th, Röntgen Therapy, by Dr. William H. Meyer; April 11th, adium in Diseases of the Skin, by Dr. A. Schuyler Clark; pril 25th, The Diagnostic Significance of Abdominal Pain, y Dr. Ludwig Kast.

Public Health Service to Conduct Summer Schools i Public Health.—The United States Public Health ervice has made arrangements with a number of universies throughout the country whereby summer schools in ublic health will be held over a period of six to eight eeks during the coming summer. In New York State ie course will be given at Columbia University, July 7th August 15th. For particulars address the United States ublic Health Service, Washington, D. C.

Doctors Quit Bay Shore Hospital.—Because of a difference of opinion in regard to the administration of the ospital, twenty-eight doctors, or sixty per cent. of the edical staff, of the South Side Hospital have tendered ieir resignations. It is understood that the action on the art of the physicians marks the culmination of a disagreeent that has existed for some time between the Board of anagers of the hospital and the members of the medical aff. The medical board is headed by Dr. William H. oss and Dr. James S. Ames of Babylon is secretary.

Diphtheria Immunization in Parochial Schools.—chick testing and diphtheria immunization work are being arried out on an extensive scale in the parochial schools f Syracuse and Auburn, N. Y., where beneficial effects re already apparent. Consent was received from 1,928 arents of children in Syracuse, and in Auburn 1,334 Schick ests were made. During the month of January as a result f previous immunization work carried on in that city, nly three cases of diphtheria were reported, namely, two dults and one child; none of whom had been immunized.

Smallpox in Chicago.—Ten new cases of smallpox were discovered in Chicago on March 3rd, which brought the total number of cases up to twenty-five within a week. St. Elizabeth's Hospital in North Claremont Avenue has been quarantined as a result of finding a smallpox patient in the hospital and eleven nurses who were not vaccinated.

Rockefeller Foundation Gives $400,000 to Washington University Medical School.—The General Education Board of the Rockefeller Foundation has donated $400,000 to Washington University, St. Louis, Mo., for the endowment of a department of bacteriology and preventive medicine in the medical school of the institution.

Sewage Menace to Water Supply Must Be Abated.—As a result of a formal hearing held by the State Commissioner of Health on February 14th, the village of Hastings has been granted sixty days in which to abate the nuisance created by inadequate sewage disposal which for many years has affected not only the village of Hastings, but indirectly constituted a menace to the drinking water supply of the city of Yonkers.

The Lane Lectures.—Dr. Ludwig Aschoff, professor of pathology at the University of Freiburg, Germany, will deliver the five Lane lectures for the year 1924. These lectures will be given in Lane Hall, Stanford University Medical School, San Francisco, some time in May. The topics of the lectures are: The Place of Origin of Biliary Pigment; Atherosclerosis; Ovulation and Menstruation; Inflammation, and Fatty Changes in Disease.

Dr. Cumming Retains Post of Surgeon General.—Dr. Hugh S. Cumming was confirmed on March 1st as surgeon general of the Public Health Service. It was said that the confirmation was unanimous. Dr. Cumming, who has been in the Public Health Service since 1894, was nominated surgeon general by former President Wilson in January, 1920, and continued in that post through the Harding administration.

Association of American Medical Colleges.—Dr. Ray Lyman Wilbur, of Stanford University, was elected president of the Association of American Medical Colleges, at the fourth annual meeting of the association, held in Omaha February 28th to March 1st. Other officers were elected as follows: Dr. Hugh Cabot of the University of Michigan, vice-president; Dr. F. C. Zapffe, of Chicago, secretary; Dr. David L. Edsall, of Harvard University, chairman of the executive council. The next annual meeting will be held in Boston in February, 1925.

Country Home for Drug Addicts Who Undertake Voluntary Cure.—Dr. Carleton Simon, Deputy Police Commissioner in charge of the narcotic division, New York, announces that an anonymous friend has placed at his disposal a country estate on the banks of the Hudson for the drug addicts who undertake the voluntary cure provided by the state. They can go to this home in the country and stay for an indefinite period free of all expense, with a guarantee that their identity will never be revealed. Twenty-five drug addicts are taking advantage of Dr. Simon's free cure. All are men from eighteen to thirty-five years of age.

Personal.—Dr. Edward Salmon, a medical inspector in the Jersey City Health Department, has been appointed acting health officer to fill the vacancy caused by the death of Dr. Joseph Craven.

Dr. Herman B. Allyn has been appointed chairman of the section in general medicine of the College of Physicians of Philadelphia, and Dr. E. J. G. Beardsley, clerk. The executive committee consists of Dr. David Riesman, Dr. O. H. P. Pepper, and Dr. John H. Musser, Jr.

Dr. Donald B. Armstrong has resigned as executive officer of the National Health Council and has accepted an appointment as assistant secretary of the Metropolitan Life Insurance Company.

Lectures on Tuberculosis and Industrial Hygiene for Physicians.—A six weeks' combined course on tuberculosis and industrial hygiene for medical practitioners has been arranged at the New York Academy of Medicine under the joint auspices of the Public Health Committee of the Academy, the New York Tuberculosis Association, and the Division of Industrial Hygiene of the New York State Department of Labor.

The lectures will be held at the Academy on Tuesday and Friday afternoons at 4:30, beginning March 14th and ending April 22nd. Two lectures of thirty minutes each, one on tuberculosis and the other on some phase of industrial hygiene, will be given at each session. An additional half hour will be devoted to answering questions from the floor.

Foreign Correspondence.

LONDON LETTER

(From our own correspondent)

LONDON, *February 1, 1924.*

DR. W. SEAMAN BAINBRIDGE'S REPORT ON THE RUHR AND RHINELAND CONDITIONS

A report on the conditions in the Ruhr and Rhineland during the summer of 1923 made to the Council, New York Commandery Military Order of Foreign Wars of the United States, by Dr. William Seaman Bainbridge, was largely copied and editorially commented on by a London daily recently. While it does not come within the scope of a medical journal to deal with matters political, it may be said that in this country owing, of course, largely to the publicity given to the report and the editorial comments thereon in the daily press, it has attracted a great deal of attention.

INFLUENZA IN GREAT BRITAIN

Influenza is now widely distributed over the country, but generally speaking the type is mild. It seems to be a form of the affection in accord with the 1923 epidemic of grippe, described by Dr. B. M. Randolph in the January 16th issue of the JOURNAL. Both bronchial and gastrointestinal forms are frequent, and the nervous system is subject to a considerable amount of disturbance. As usual insomnia and depression are marked features. Of course, the complications and aftereffects of this insidious disease are most to be dreaded. So far, streptococcal complications have been few and far between and consequently the mortality has been low.

THE MONKEY GLAND TREATMENT

The socalled monkey gland treatment was made the subject of a lecture by Professor Winifred Cullis at King's College, London, on January 5th, last. Professor Cullis explained all that is known of the ductless glands and said that the study of these glands was one of the romances of the past twenty or thirty years. She pointed out that women were more prone to disturbances of the thyroid gland than were men, and remarked in this connection that all the women in the paintings of Burne-Jones and Rossetti showed distinctly enlarged glands. The thyroid gland was the controller of the rate of living and in man it was larger in proportion than in other animals. It had been suggested that it was owing to the presence of the thyroid that a sea animal changed to a land animal; and some support was lent to this theory by the fact that only when thyroid secretion was present could a tadpole change to a frog. Were thyroid added to the water in which the tadpole was living the process of the change would be hastened, and the frog would be rapidly formed, though of very small size. A gland which was of vital importance was the pituitary, upon which depended our growth. The lecturer told of an undersized schoolboy who, upon being given treatment for a deficiency of the gland, grew two and a half inches in one term. In view of this very rapid growth the treatment was discontinued, and at once the boy stopped growing. Professor Cullis humorously alluded to the incident in *Alice in Wonderland* where Alice ate from one side of the mushroom and instantly grew, and she added tha the fat boy in *Pickwick* was clearly suffering fron a complaint of the pituitary gland. At the conclu sion of her lecture Professor Cullis referred to th socalled monkey gland treatment. It was absurd she said, to speak of monkey gland as if the monke had only one gland. Having indicated the partic lar secretion which was used in the treatment th lecturer pointed out that Voronoff maintained tha senility was due to the failure of the internal secre tions. She was present at Edinburgh when he lec tured and by means of a cinematograph film h demonstrated his treatment, which according to th films was strikingly, almost absurdly, successful i imparting energy and vitality to the animal or ma upon whom the treatment was employed. Professo Cullis, however, uttered a note of warning again expecting too great results from the method. Sh concluded that if these changes could be produce it must not be supposed that the treatment meant a increase of longevity. It did not. What it mea was that the human powers would be utilized rig up to the last. If what we desired was to increa the span of life we would have to turn to eugenic

TOLL OF LONDON TRAFFIC

Street accidents in London during the months o October, November and December last numbered fewer than 18,592, and in that period 189 perso were killed. Omnibuses were responsible for thirt six deaths; private motor cars for forty-seven; tra and commercial motors of one kind or another f sixty-one; motorcycles, nine; taxicabs, fourteen; ar tramcars, three. Fatal accidents in which hor drawn vehicles were concerned numbered fourte

GIFTS TO MEDICAL SCHOOL OF CAMBRIDGE UNIVERSI

It is announced the Rockefeller Institute h most generously made an offer of £100,000 for t construction and maintenance of a new School Pathology at Cambridge University, together with contribution of £33,000 towards its endowment, pr vided that the university can secure a furth £33,000 for the same purpose. Mr. and Mrs. P. Molteno, to whose munificence the university already owes the Institute of Parasitology whi bears their name, have further endowed it with sum of £5,000 to meet certain deficits, and to incre the endowment fund.

HEALTH SECTION OF LEAGUE OF NATIONS

Owing to the generosity of the Rockefeller Fu Trustees, the League of Nations which has alrea done much in fighting disease in Eastern Europe, about to inaugurate a scheme calculated to be great service to international health. A sum money is now available to enable medical officers health to visit foreign countries and take perso part in the work of prevention and administrati The Ministry of Health has given full support to scheme. It is an interchange of medical offic which should promote good feeling as well as go health.

FATAL ACCIDENT TO A WELL KNOWN ANESTHET

Dr. George A. H. Barton, the well known an thetist, when riding in Hyde Park on January 1 last, was thrown from his horse and died in George's Hospital as a result of the injuries receiv

LATIN AMERICA LETTER

(From our own correspondent)

BALBOA HEIGHTS, C. Z., *January 30, 1924.*

TO INVESTIGATE THE BLONDE INDIANS OF PANAMA

Mr. R. O. Marsh, of New York, who lays claim to having discovered a race of white Indians in the lower part of the Chucunaque Valley, recently arrived on the Isthmus at the head of an expedition of anthropologists, archeologists, geologists, zoologists and biologists from the Smithsonian Institute and Museum of Natural History of Washington, D. C., the George Washington University, the American Museum of Natural History, the University of Rochester and the New York Zoological Society. Among those in his party are Dr. Herman L. Fairchild, of Rochester, N. Y., Professor J. Baer, Dr. C. M. Breder, Jr., and Mr. Paul Benton. Other scientists are expected to arrive in the near future and the expedition which will include fifteen prominent investigators will then trek for the hinterland.

The primary purpose of these workers will be to make a complete ethnological, archeological and anthropological survey and exploration of the entire Darien district including the San Blas region. This territory lies in the eastern part of the Republic of Panama not far from its junction with the Republic of Colombia. The expedition will start down the Pacific Coast, through San Miguel Bay and up the Tuira River to the native town of Yavisa near the mouth of the Chucunaque River where the headquarters of the explorers will be located. Thence they will proceed up the river in shallow draft boats with outboard motors. Later they will cross over the divide to the Bayano River and descend to the River Chico. Another party will go up the Tuira River to Santa Cruz de Cana and cross to Piñas Bay. A third party will cover the entire San Blas coast from the Gulf of San Blas eastward to the Colombian border. The scientific equipment of the expedition includes all requisites for making taxidermic and ornithological collections, a complete motion picture outfit and instruments for various types of surveys. There are many physicians here who would make almost any sacrifice to accompany Mr. Marsh but most of them are wholly sceptical of his claims to a discovery of true white primitives among the native tribes. It is his belief that the seven white Indians which he saw and photographed in his most recent expedition came from the mountain hinterlands, a region which it is hoped to visit and study thoroughly.

This should be an undertaking of great interest since even the Conquistadores were never able to penetrate that area. Mr. Marsh refutes the common belief that the Indians which he saw are albinos, maintaining that they are a remnant of a prehistoric Nordic infusion or perhaps the remnants of a very ancient primitive paleolithic race analogous to the Cro-Magnon man of Western Europe. Many of us here have made voyages into the San Blas country and have seen the albinos who are there. Some of them are quite devoid of pigment but many have red hair and blue eyes with very fair skins. These are not believed to be the result of miscegenation since the San Blasians are scrupulous to the point of rudeness that no representative of any other race shall spend the night on their islands. Their women are guarded in a manner which would make a Turk envious and there has been no infusion of outside bloods. Infidelity on the part of their women invariably results in immediate divorce by the route of sudden death, thus definitely assuring that no immoral Nordic has left behind him a blonde heritage. Albinos, however, are not at all uncommon. Just why they are no one seems to know, and it may be that they are related in some way to the whites which Mr. Marsh saw. While the medical men here are preserving a healthy scepticism on the subject, the romance and the lure of this exploring expedition intrigues them greatly and they await the outcome with great interest.

NAVAL MEDICAL OFFICERS DETACHED FROM SUBMARINE BASE

The following officers of the Medical Corps of the Navy who have been attached to the Submarine Base at Coco Solo during the recent maneuvres have been ordered to ships:

Lieutenant Commander R. F. Jones, M. C., U. S. N. to the *Savannah.*

Lieutenant Commander R. H. Miller, M. C., U. S. N. to Destroyer Division No. 27.

Lieutenant G. H. Mankin, M. C., U. S. N., to the *Camden.*

They have been relieved by the following officers:

Lieutenant H. S. Cragin, M. C., U. S. N., from the *Camden.*

Lieutenant J. E. Henry, M. C., U. S. N., from the *Maryland.*

Lieutenant M. S. Stover, M. C., U. S. N., from Destroyer Division No. 27.

NEW CHIEF QUARANTINE OFFICER

Surgeon C. P. Knight, United States Public Health Service, is expected to arrive on the Isthmus on February 13, 1924, for the purpose of relieving Surgeon W. C. Rucker, United States Public Health Service, who has been Chief Quarantine Officer since October 28, 1920. He will take up his new duties about March 6th when Dr. Rucker will leave for the United States. During the past three years many advances have been made by the Quarantine Division, including the introduction of wireless pratique, the adoption of a new type of quarantine declaration, the improvement of the technic of ship fumigation and the abolition of unnecessary and time consuming delays to ships. At the present time ship and passenger delays and detentions have been reduced to the minimum compatible with safety to the health of the Canal Zone and the Republic of Panama. Large advances have been made in the cooperative efforts with other countries to prevent the spread of communicable disease and these have culminated in the Conference of the Maritime Quarantine Authorities of the West Coast of South America which the Republic of Panama is convening on February 25th. This conference is the conception of Dr. Rucker who in organizing it and carrying it to completion makes it the fitting climax of three years of constant labor, having for its object the rationalization and modernization of maritime quarantine on the Isthmus of Panama.

SAFE MILK FOR PANAMA

Dr. Henry Goldthwaite, health officer of the city of Panama, issued an order that, beginning with January 25th, the sale of milk which has not been pasteurized or is not contained in bottles of approved sanitary pattern may not be sold. The Alcalde of the city issued a proclamation requesting the ready compliance with the order by all milk dealers. The proclamation was widely distributed and the city placarded with brilliant red notices calling upon the population to insist on pasteurized milk for the protection of the health of children and the prevention of the spread of tuberculosis, diphtheria, typhoid fever, scarlet fever and dysentery.

INCREASE IN PAY FOR NURSING PERSONNEL

Effective January 1, 1924, Colonel J. J. Morrow, the Governor of the Panama Canal, has authorized a ten dollar monthly pay increase for all nursing personnel.

REDUCTION IN CHARGES FOR FUMIGATION OF VESSELS

The Governor of the Panama Canal announced on December 4, 1923, the reduction of charges for the fumigation of vessels to actual cost plus ten per cent. This was done to stimulate the fumigation of vessels at Canal Zone ports in order better to protect the health of the Isthmus and to control further the world spread of bubonic plague through the medium of ship borne rats. It is believed that this cost reduction, in addition to the improved methods of fumigation which are employed, will make ship fumigation at Canal Zone ports attractive to shipping owners. Cyanogen chloride is now used exclusively as a ship fumigant. Talc is not employed in its liberation and the work has been so systematized and perfected that the gas is gotten into and out of the ships with the utmost rapidity, thus guaranteeing to ships the minimum of time losses.

The announcement mentioned above also abolished charges for quarantine inspection of vessels arriving after 6 p. m. and before 10 p. m. This will be an accommodation to ships and the Canal alike since if a vessel is inspected the night before it will be ready to begin its transit of the Canal early the next morning. This is in line with the policy of rendering to ships quarantine service with the minimum interference with commerce. Speed launches are used by boarding officers and every other measure which will conserve time has been put in force. As a result the number of ship days lost on account of quarantine has been reduced from 480 in the fiscal year 1920 to zero ship days in 1923. This has been accomplished without increasing the health hazard to the Canal Zone and the Republic of Panama. It is estimated that the average value of a ship day is about $2,800, hence losses to shipping have been reduced by about $1,000,000 since 1920.

As an extension of this policy, vessels arriving after 10 p. m. and desiring to bunker are taken to a fuel dock in quarantine under the guarantee that no person or thing shall leave the ship until *pratique* has been granted. During the night the vessel bunkers and at a suitable hour the next morning receives quarantine inspection, after which, if *pratique* is granted, it is ready to proceed. This has proved of great benefit to ships and passengers alike and is entirely logical because a properly ratguarded vessel at dock in quarantine is no more dangerou to the health of the Canal Zone than one which i idly swinging around her anchor out in the bay an the time thus spent had much better be employed i taking on fuel for the continuation of the voyage.

NEW FORM OF QUARANTINE DECLARATION

On December 15, 1923, the Governor of th Panama Canal instituted a new form of quarantin declaration to be sworn to before the Quarantin Boarding Officer by the master and the surgeon o the vessel. Quarantine officers have the legal author ity to administer oaths and for this purpose hav the powers of notary public. A false oath unde these circumstances constitutes perjury. The ne quarantine declaration is very specific and if th quarantine officer is satisfied that the statement i true, that the vessel comes from a clean port and ha a good sanitary history, he is authorized to acce the declaration in lieu of quarantine inspectio Those persons destined to places in the Canal Zon are given the immigration inspection by him but th other passengers and the crew are not examine This facilitates enormously the movement of shi through quarantine and spares passengers muc inconvenience.

INTERNATIONAL COOPERATION IN MARITIME QUARAN TINE

In his annual report for the fiscal year 1923, th Governor of the Panama Canal says: "Throughou the year the policy of extending cooperation wi other nations in the matter of quarantine has be continued. The chief quarantine officer visited th principal ports of Central America on both the Paci and the Caribbean coasts and the west coast of Sou America as far south as Valparaiso. As a result, better mutual understanding was created and th interchange of sanitary reports increased.

"The chief danger which threatens the Panam Canal in the matter of maritime quarantine is th presence of bubonic plague in west coast Sou American ports. If this disease should gain ent into the Canal Zone, it is not probable that the would be any great epidemic, but there probab would be a certain amount of falling off in the nu ber of ships transiting the canal, since undoubted the presence of plague at this point would resu in the imposition of quarantine by other governmen The work of making the Canal Zone proof agai the introduction of plague, by the elimination of r harboring places and catching of rats, was ene getically continued during the year.

"Yellow fever has ceased to be a menace. Duri the year an epidemic outbreak occurred in the i terior of Colombia, but aside from the small restr tions which this necessitated, quarantine was n imposed against any country on account of yell fever.

"The policy of moving the ships through quara tine with the utmost expedition has been continu During the year no ship has been detained in qu antine. This has reduced very materially the los which ships formerly suffered in this way. F example, in 1920 the estimated loss on account quarantine delays was $10.75 a thousand tons shipping. In this fiscal year the estimated loss w $0.027 per thousand tons of shipping."

GENEVA LETTER

(From our own correspndent)

GENEVA, *November 1, 1923.*

SYPHILIS AND TUBERCULOSIS.

The coexistence of syphilis and tuberculosis has been found to be four per cent. in the cases studied by Dr. G. Roque, of Lyons. Unquestionably, it is of the utmost importance to treat syphilis when combined with tuberculosis, but the exhibition of potassium iodide is dangerous and should be proscribed. Mercurial treatment is very slow in action and must be continued for a long time, and on this account it produces anemia and emaciation. Mercurial preparations may remain without effect, even after prolonged administration, which is not devoid of danger, and in all cases where Dr. Roque noted good results mercury had been associated with arsenobenzol. Hence, he believes that arsenical treatment is the really efficacious one, but it is dangerous, because the liver in tuberculous subjects is invariably diseased, and in some patients a superadded arsenical toxemia is quite enough to create an hepatic insufficiency resulting in an acute outburst in the development of tuberculosis.

Roque, however, is not inclined to reject arsenobenzol treatment, because its action is certain and great amelioration, or even cure, may result from its use, but treatment should never be begun before a series of laboratory tests has been made demonstrating the functional activity of the hepatic cells. Should these tests reveal hepatic insufficiency, arsenical treatment must never be resorted to as it courts disaster; instead of checking the evolution of the tuberculosis associated with the syphilis it hastens its development.

In speaking of syphilis, it may be interesting to refer to some recent work done at the Psychiatric Clinic of Lille, France, by Nayrac and Demacou, with Targowla's precipitation reaction in the cerebrospinal fluid with tincture of paregoric. In syphilis of the neuraxis a more or less marked precipitation is supposed to occur in an emulsion of the cerebrospinal fluid and the paregoric. The results obtained by Nayrac and Demacou in forty cases are as follows:

In the first place, in twenty of these subjects with syphilitic lesions of the central nervous system, the paregoric reaction was in accord with both the clinical findings and the Bordet-Wassermann reaction. These cases consisted of general paralysis, tabes, taboparalysis and cerebral syphilis. In seventeen subjects both the clinical findings and the Bordet-Wassermann reaction negatived syphilis. These cases comprised chronic delirium, circular psychoses, epilepsy, senile dementia, mental confusion, dementia precox and arrested mental development. In all of them the paregoric reaction was negative. In three other cases the paregoric reaction was in contradiction with the Bordet-Wassermann. In two of these cases—clinically taboparalysis and general paralysis respectively—Targowla's reaction was distinctly positive, the Bordet-Wassermann being negative. In the third case—a periodical psychosis—Bordet-Wassermann was negative, while the paregoric reaction was weakly positive.

In other words, in thirty-nine cases out of forty, that is, 97.5 per cent., the paregoric reaction was in accord with the clinical findings. In thirty-seven cases out of forty, that is, 92.5 per cent., the Targowla was confirmed by the Bordet-Wassermann. If one only takes into consideration mediumly or strongly positive paregoric reactions, it can be said, as Nayrac and Demacou maintain, that the paregoric reaction is a positive proof of nervous syphilis.

LABORATORY DIAGNOSIS OF TYPHOID INFECTIONS.

In the laboratory diagnosis of typhoid infections, hemoculture or Widal's serodiagnosis will always lead, but the former test cannot always be carried out by the busy practitioners in every case, while Widal's seroreaction, although easier to undertake, its tardy appearance—at about the eighth day of the disease—and its default when the patient has become vaccinated, thus confering on the blood the power of agglutination, may result in difficulties in practice. Because of these reasons, Dr. Henri Bonnin, physician to the Bordeaux Hospitals, has experimented with a number of the more recent diagnostic reactions of typhoid infections and has come to the conclusion that the only really scientific ones are Ehrlich's diazoreaction and the reaction of Moriz Weisz. Each of them is founded on the same principle, namely, the search for a product of disassimilation of the endogenous albuminoids—urochromogen. The Moriz Weisz reaction is more delicate than Ehrlich's and is often positive when the latter is not. Likewise it appears earlier and lasts longer than the diazoreaction. Given these data, it can be said that they both are early and faithful diagnostic aids in typhoid; the Weisz reaction, in particular, appears on the third or fourth day of the disease, therefore, before the seroagglutination. Both these reactions go apace with the evolution of the malady and also indicate with exactitude the approach of a relapse.

Their importance from the viewpoint of prognosis, especially Weisz's reaction, assumes great value in pulmonary tuberculosis; when positive, and sometimes followed by the diazoreaction, it indicates death within a few months. Both these tests are irregularly positive in a large number of diseases, Weisz's in particular, such as the eruptive fevers, erysipelas, diphtheria, cachectic states, and similar conditions, so that their diagnostic value is thereby impaired. But when added to the other symptoms of typhoid, they are of value as an early diagnostic sign.

Russo's and Silvestri's reactions are frequently positive in typhoid, but are less constant and are met with in other diseases.

THERAPEUTIC VALUE OF BLISTERS.

At a recent meeting of the Bordeaux Medical and Surgical Society, Dr. Micheleau remarked that blisters, which are accused of numerous crimes and are being discarded in practice, still possess some therapeutic value. The reproach made that vesiculation produces nephritis, furunculosis, etc., is excessive. On the other hand, blistering offers numerous advantages. By this means one obtains an almost complete sedation of pleural pain, but it is not to be repeated as often as was formerly done. A blister the size of a silver quarter of a dollar is serviceable at the onset of a pleural collection, likewise when this is at its height or when the fluid is slowly absorbed. Dr. Micheleau thinks that when blistering has been applied, the patients were less exposed to the complications of tuberculosis.

Book Reviews

RECENT FRENCH LITERATURE.

Les Ulcères de l'Estomac et du Duodenum. By ENRIQUEZ and DURAND. Paris: Masson et Cie., 1923.

Clinique médicale. By CHARLES ACHARD. Paris: Masson et Cie., 1923.

La Chronaxie. By GEORGES BOURGUIGNON. Paris: Masson et Cie., 1923.

Les Ferments des Leucocytes. By NOEL FIESSINGER. Paris: Masson et Cie., 1923.

Les Processus de Désintégration Nerveuse. By IVAN BERTRAND. Paris: Masson et Cie., 1923.

L'Alcoolisme Cérébral. By R. BENON. Paris: G. Doin, 1924.

Les Grandes Syndromes Respiratoire. Fascicule I. By E. SERGENT. Paris: G. Doin, 1924.

Manuel de l'accoucheur. By DEMELIN and DEVRAIGNE. Paris: G. Doin, 1924.

Cancer du Rectum. By CHALIER and MONDOR. Paris: G. Doin, 1924.

Conférences de Clinique Médicale Pratique. By LOUIS RAMOND. Paris: Vigot Freres, 1924.

The authors of *Les Ulcères de l'Estomac et du Duodenum* have presented the diagnosis of these lesions in a clear and concise manner. The book is especially to be commended to the American reader, because the authors are not always in accord with the teachings of the American and English schools, in respect to the diagonsis of the seat of the ulcer by modern methods and their views on this point are highly interesting and deserving of much attention.

* * *

Prof. Achard, in his *Clinical Lectures,* of which there are twenty-eight in the present volume, describes in an interesting way the following morbid processes: staphylococcal septicemia; enterococcal septicemia of the rheumatoid purpuric type; puerperal infection; contagion of unrecognized scarlet fever; associated diphtheria; the clinical forms, pathogenesis and serotherapy of tetanus; purulent pneumococcal meningitides, pilous virilism, diabetes and Basedow's syndrome (five lectures). Other affections are also treated in the lectures, but the list given above will suffice to show the extreme interest of the book.

* * *

Dr. Bourguignon's book on *Chronaxia* is, if we mistake not, the first work comprising the entire subject. The author attacks the problem of measuring chronaxia through the integuments without exposing nerves or muscles and then adapts his technic to the study of man and animals in the normal and pathological states. It is evident that the study of chronaxia changes the point of view from which the study of the nervous system should be envisaged, and reacts on the manner by which diagonsis relating to the measure of the excitability should be established. Besides, the study of chronaxia brings forth certain indications with a precision heretofore unknown from the viewpoint of treatment.

* * *

Dr. Fiessinger's work on the ferments of the leucocytes is an important contribution to biochemistry and the result of fifteen years' labor. The application of ferments of leucocytes to general pathology illuminates certain phenomena which otherwise are difficult to understand, such as temperature, fever from absorption, resolution of pneumonic hepatization and exudates, homogeneization and tyrosinoreaction of the sputum, liquefaction of pus, the detersive process of wounds and their union, and antituberculosis defence of the organism.

By their study, one may establish a method of biological diagnosis, zymodiagnosis as it is termed by Fiessinger. Finally, modern theraputics becomes enriched from our knowledge of ferments of leucocytes in antiproteosotherapy, as well as general leucotherapy in affections of the nervous system, acute infections and tuberculosis.

* * *

The study of secondary degenerations plays a considerable part in the acquisition and progress of our knowledge relating to the central nervous system and Dr. Bertrand's book on *Les Processus de Désintégration Nerveuse,* is a decidedly important contribution to the subject. The processes of nervous disintegration are extremely varied and their various aspects are described in a masterly fashion by the author. The beautiful original illustrations in the text adds to the great value of the book and we can say unhesitatingly that Dr. Bertrand has performed a great service to all who are interested in the minute normal and pathological histology of the nervous system.

* * *

Dr. Benon, in his excellent work on *Cerebral Alcoholism,* shows how alcohol determines acute and subacute cerebral affections, as well as incurable chronic mental processes. Of the acute types, the author studies, first, alcoholic delirium which, in fact is a variety of acute toxic hallucinosis, hence the importance given to the description of the hallucinations; secondly, delirium tremens, or febrile alcoholic delirium; thirdly, alcoholic mental confusion, which is invariably episodic—never chronic; fourthly, Korsakoff's alcoholic psychosis, with its three fundamental syndromes, viz., fixation amnesia, jubulation and paragnosia, and the syndrome of dementia which is likely to be the terminal phase; fifthly, the alcoholic second state, and sixthly, deliriant and maniacal intoxication. As chronic cerebral forms, Dr. Benon first describes the mental state of the chronic alcoholic, dominated by disturbance of character: passion for alcohol—dipsothymia and dipsomania—and a tendency to anger and jealousy; secondly, early and late alcoholic epilepsy; thirdly, chronic systematized delirum, secondary to acute and subacute alcoholic hallucination deliria, and lastly, the chronic deliria of jealousy, with interpretation or hallucinations with or without terminal melancholia. We are inclined to regard this book as one of the best contributions to the subject that has so far appeared.

* * *

Prof. Sergent's treatment of the major respiratory syndromes will be complete in two volumes, the first of which has just been issued from the press. In it the author has grouped the major syndromes resulting, firstly, from lesions of the upper respiratory

ract and bronchi, and secondly, from the functional disturbances of the respiratory tract. Hence are discussed the syndrome of respiratory insufficiency, descending rhinobronchitis, asthma, the syndrome of chronic bronchitis and emphysema and bronchial dilatation. The book is essentially clinical, is by a highly esteemed authority, and is well worth perusal.

* * *

In their *Handbook of Obstetrics,* Demelin and Davraigne first give a very clear account of eugenesis and eutocia. The second part of the volume deals with dysgenesis, dystocia and pathology, with obstetrical operative technic. All the subjects are dealt with from the viewpoint of practice and theoretical explanations are only given for the comprehension of the phenomena and for the choice of the best treatment of accidents and functional disturbances. The book is illustrated with 465 figures and is unquestionably a reliable textbook.

* * *

Cancer of the Rectum, by Chalier and Mondor, is a thorough treatise on this important subject, written by two surgeons who have given long and careful attention to the question. The book is not only original as a general study of cancer, but gives—and this is most essential—a detailed account of the clinical difficulties and problems to be solved by the surgeon. The illustrations are excellent and, on the whole, this monograph is a solid contribution to the study of a very frequent malignant process.

* * *

And last, but not least, we have in the *Clinical Lectures* by Dr. Ramond, one of the best series of clinical instruction that has appeared in any language. The volume is the second series of lectures, the first having appeared last spring. The author has a surprising clearness in his writings which makes the perusal of the book a pleasure. The fifteen lectures comprising this series are: diabetic coma; pulmonary congestion; the diagnosis of ocular paralysis; diagnosis of chronic splenomegalia; cancer of the esophagus; tuberculous meningitis in the adult; perinephritic abscess; facial erysipelas; diagnosis of hemiplegia; peritoneopleural tuberculosis; gastric crises of pericarditis and Bright's disease; acute appendicitis; putrid pleurisies and lastly, alcoholic polyneuritides. We warmly commend these lectures to every practising physician familiar with the French language.

HEART DISEASE

Modern Methods in the Diagnosis and Treatment of Heart Disease. By Francis Heatherley. New York: William Wood & Company, 1923.

This excellent small volume, dedicated "to those who find salvation in compensatory hypertrophy and who fear a well conducted mitral," should be in the hands of every physician who has lacked the time and opportunity to keep himself informed of the progress of our knowledge during the last fifteen years concerning the heart and its disease. It is designed as a short, clear sketch of the present state of knowledge regarding heart disease, which might be useful to the general practitioner who is too busy to wade through all the recent literature on the subject.

In a clear, simple and convincing style the author discusses the importance of myocardial competency, the relative unimportance of murmurs, the significance of the irregularities, and the fallacy of the back pressure theory. In subsequent chapters he takes up the diagnosis of the arrhythmias, heart failure, symptoms and signs, and prognosis and treatment. The presentation is entirely clinical without recourse to instrumental methods, but is based on the knowledge that has been gained by the exact graphic methods for the study of the heart. Heatherley has succeeded in emphasizing the important facts and in eliminating nonessentials. Moreover, the text abounds in sound practical precepts, the fruit of solid experience. The case histories used for illustration are graphic and to the point.

The author is to be congratulated on having achieved more than he had planned. Not only will the book be of value to the general practitioner of the old school, but it will serve as a useful elementary text for the medical student, and as a model of lucid and sound clinical teaching to his instructors.

PROCTOLOGY

A Manual of Proctology. By J. Chittenden Hill, M.D. Philadelphia and New York: Lea & Febiger, 1923.

The purpose of Hill's book is to aid the practitioner and surgeon in the recognition and treatment of rectal diseases. While the author considers proctoscopy as an essential aid, he does not neglect the older methods of examination. Thus, with regard to a digital examination of the rectum, Hill expresses himself as follows: "Frequently, more efficacious than any instrument is examination with the index finger, covered by a thin rubber tissue cot, thoroughly lubricated with vaseline, and gently inserted. Often more examination is obtained by touch than by sight; for example, to the experienced examiner the feel of a growth means more than its gross appearance. It should always be borne in mind, however, that all manipulations, whether digital or instrumental, should be conducted in as gentle a manner as possible."

The differential diagnosis between benign and malignant strictures of the rectum are described in a lucid way, as follows: There are two forms of stricture—benign and malignant—and the only point of importance is the differentiation between these two. When a cancer has resulted in rectal stenosis, a mass of variable size can easily be made out both by digital and proctoscopic examination. On palpation, this gives the impression of a tumor much like the cervix uteri, except that it has a nodular feel and is often associated with invagination of the mass. The normal mucous membrane surrounding such invaginations gives them the smooth feel of a normal cervix.

A benign stricture of the rectum, on the other hand, when encountered at the anal orifice or at the level of the internal sphincter, can never be mistaken for anything else than an inflammatory stricture. At the anal orifice the overlying skin is tightly drawn down by scar tissue and will rarely admit the index finger. At the level of the internal sphincter there is an annular, banklike constriction. It almost feels as though a string were insinuated beneath the mucous membrane and tightly tied. Above this level

the stricture gives the sensation of passing one's finger into the mouth of a funnel. It is not nodular like cancer, but smooth and hard. In the tubular stricture there is quite a mass, but in the annular type this is not a feature. It is unusual to find an annular stricture more than a quarter to a half inch in thickness, so that the tumor effect is not well marked. This helps to differentiate it from cancer.

Hill's manual is practical and concise and will be of great value to both medical practitioner and surgeon.

DISEASES OF THE ALIMENTARY CANAL

Krankheiten des Verdauungskanals, des Pankreas und des Peritoneum. Zweite, vollkommen neu bearbeitete Auflage. Von Professor Dr. Carl von Noorden, Geh. Med.-Rat. in Frankfort a. M. Leipzig: Verlag von Georg Thieme, 1923. Pp. 107.

This brochure is No. 6 (entirely revised) of *Diagnostische und therapeutische Irrtümer und deren Verhütung, Innere Medizin,* edited by Schwalbe. A great many more diagnostic and, consequently, therapeutic mistakes are made in the handling of the diseases of the alimentary canal, pancreas and peritoneum than in that of any other system in the body. The establishment of a diagnosis frequently requires careful and painstaking study and investigation over an extended period of time. Very frequently the condition is seriously neglected for that reason. Only the most important mistakes that are likely to be made are discussed.

CHEMISTRY OF UREA

The Chemistry of Urea. The Theory of Its Constitution and of the Origin and Mode of Its Formation in Living Organisms. By Emil A. Werner, M.A., Sc.D., F.I.C. London: Longmans, Green & Co., 1923.

Since that famous day in 1828, when Wöhler accomplished the historic synthesis of ammonia with cyanic acid, urea has probably received more chemical attention than any other organic substance, because of its double importance, not only as an abstract chemical substance, but also as an anesthetic and as the great terminal excretory form of the nitrogenous residues of man, the higher apes, and Dalmation coach dogs. Volumes have been published on various phases of the relation of urea to human disease, but the chemistry has had to wait, and only now has been collected in monograph form. The writer has devoted much of his time to original research on the pure chemistry of urea, and has himself made important contributions to the theory of its structure. He is convinced that the older idea of the carbamide formula is incorrect, and that a cyclic formula is more consonant with the facts. The final decision must be left to the theoretical chemists. The text contains in addition to the purely theoretical discussion a very complete résumé of the properties of urea, its occurrence in nature, its decomposition and reactions. One of the most interesting facts is that the direct synthesis of carbon dioxide and ammonia can be obtained by passing these gases through a highly heated tube containing a suitable catalyst, so that the commercial production of large quantities of urea for fertilization seems to be one of the possible achievements of chemical engineering in the near future. A complete bibliography is appended to this valuable monograph.

REPRINTS FROM THE GEORGE WILLIAMS HOOPER FOUNDATION

Collected Reprints from the George Williams Hooper Foundation for Medical Research, Volume VII. University of California: 1922-1923.

This volume contains fifty reprints of papers which have appeared in various journals during the past year, from the Department of Research Medicine of the University of California Medical School. The first fifteen papers are sponsored by Whipple and his associates, and represent his studies on blood fibrin, röntgen ray intoxication, liver function, etc. It is interesting to have the recent publications of Alvarez gathered together in an easily accessible form. The last part of the book deals with the distribution of botulism in the United States, Alaska, Canada, China, the Hawaiian Islands, Belgium, Denmark, England, the Netherlands, and Switzerland.

A YEAR BOOK OF MEDICINE

The International Medical Annual: A Year Book of Treatment and Practitioner's Index. By Many Contributors. Forty-first Year. New York: William Wood & Co., 1923.

The forty-first issue of this well known *Medical Annual,* appears along the lines of last year's volume, which has met with considerable approval from the profession. The reader will be impressed by the fact that clinical diagnosis has been stressed by the various writers, as opposed to the more exclusive form of laboratory diagnosis, which has in a measure overshadowed the clinical aspects of medicine in recent years. In a volume so filled with excellent medical and surgical material, it is extremely difficult to select one or several for special mention. The best known physicians and surgeons of England, and a few from the United States, have contributed of their best to make this volume a most useful one to the internist as well as to the surgeon and the specialist. The text is liberally illustrated by forty-eight plates, some of them in color, and forty-three half tones in black and white. There is a vast fund of conservative yet up to date medical and surgical knowledge within the covers of this work, which cannot but prove to be most useful to the general practitioner and to the consultant. The publishers are to be congratulated on this excellent work.

PROCEEDINGS OF GERMAN PEDIATRIC SOCIETY

Monatsschrift für Kinderheilkunde. January-February 1923. Verhandlungen der dreiunddreissigsten Versammlung der Deutschen Gesellschaft für Kinderheilkunde in Leipzig, 1922. Im Auftrage der Gesselschaft herausgegeben von Prof. Dr. H. Brüning in Rostock, Schriftführer der Gesellschaft. Mit 26 Abbildungen im Text. Leipzig: Verlag von F. C. W. Vogel, 1923, pp. xxviii-360.

This entire double number of the *Monatsschrift für Kinderheilkunde* is devoted to the proceedings of the thirty-third meeting of the German Pediatric Society in Leipsic, 1922. It includes the papers by the leaders in German pediatrics and the discussion on nearly every aspect of pediatrics, such as the classification of nutritional disorders, gastric functional testing, hypogalactia, the utility of drawn mothers' milk, lactation, intestinal fermentation, nervous vomiting, transitory fever, atropin fever, dynamic albumin fever, nonspecific serum treatment, and many others too numerous to mention.

Medicoliterary Notes.

The Central Indiana Hospital for the Insane at Indianapolis has recently issued the eighth volume of the report of its departments of pathology and clinical psychiatry. One of the features of the volume is the inclusion of several interesting clinical papers by Dr. Max A. Bahr, clinical psychiatrist of the institution. These treat of the importance of a neuropsychiatric examination of registrants for military service, a case of multiple encephalomalacia with pathological demonstrations, a case of endothelioma of the brain, and prepsychotic manifestations in dementia precox.

* * *

The Smoke Inspector's Handbook, or Economic Smoke Abatement, is the title of a late publication by Lewis, of London. The author is Herbert G. Clinch, who, the title page tells us, is a certificated inspector of smoke, sanitation, meat and foods. Cyril Banks, medical officer of health of the County Borough of Halifax, writes the foreword in which he emphasizes the service such a study may render to the health officer and the health inspector from the point of view of the public health problem of smoke abatement and prevention.

* * *

It is time for some analyst to explain the present interest in animals and animal psychology, shown in so many recent works of fiction. Last year we had *Lady Into Fox,* by David Garnett, which won the James Tait Black Memorial prize for the best novel of 1923; *Claw and Fang,* by Ernest Glanville, a book just out, has in it a story the hero of which is a lion; and *Reynardine,* one of the stories in Don Byrne's volume, *The Changeling,* is about fox hunting. To cap the climax, we read that a French motion picture manager has, by dint of almost incredible patience, produced a film in which all the actors were animals, and, more recently, one in which animals and humans share the honors. Auguste, a chimpanzee, is the star, assisted by a company of apes, a few dogs, and some people.

* * *

The late Charles P. Steinmetz, according to a recent London announcement, has been posthumously awarded the prize of £1,000 by the trustees of the Franklin Fund, established in 1759 to reward authors of manuscripts or publications on the part played by the nervous system in the preservation and recovery of health. The treatise of Steinmetz that won the award was entitled The Nervous System as Conductor of Electrical Energy. Considering the comparative poverty in which the great electrician died, it seems almost a tragedy that this prize came so late.

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The United States Navy replaces its familiar *Handy Book* with the *Hospital Corps Handbook* for 1923, a more complete and revised form of the earlier reference and guide book.

* * *

A new note was struck in the history of modern science when the German Colonial Society announced that it had discovered a remedy for sleeping sickness which it would give in exchange for the African colonies lost during the war. In spite of any justification which might exist for such a proposal, it certainly does not seem sufficient to offset the evil results of establishing a precedent by which medical discoveries for the benefit of humanity are kept secret for commercial exploitation.

* * *

A visit to Bernard Shaw is described most vividly and interestingly by Siegfried Trebitsch in a recent issue of the *Living Age,* taken from the Berlin *Vossische Zeitung.* Besides giving us entertaining bits about the great Irishman himself, the writer comments very pointedly upon *St. Joan* and *Back to Methuselah.*

* * *

Beggar on Horseback, a play by George S. Kaufman and Marc Connelly, is one of the cleverest and most entertaining of the comedies that have been produced in New York this season. The greater part of it shows the contents of a dream, and this gives opportunity for all sorts of surprising and absurd episodes. Roland Young impersonates the dreamer who wanders through the mazes of his dream, clad in dressing gown and slippers, in the most naïve and engaging fashion. Just about the time when the series of absurdities of the dream begin to pall a bit, an exquisite pantomime, with accompanying music by Deems Taylor, is introduced.

* * *

Another interesting play is *Cyrano de Bergerac,* with Walter Hampden in the title role. This has, perhaps, an excess of what might be called poetizing in it and could be cut to advantage, without destroying its charm and beauty as one of the most perfect examples of pure romance in literature.

* * *

In a recent literary review a writer, describing a visit to Petrograd, says: "It is no exaggeration to say that every third shop is a bookstore. Literature seems to have had a true renaissance in this city where until recently the population suffered terribly from famine."

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A community mental health survey of Staten Island, New York, is being conducted by the Division on Mental Deficiency of the National Committee for Mental Hygiene. Dr. Edith R. Spaulding is directing this study.—*Mental Hygiene Bulletin.*

* * *

Stuart P. Sherman has in a recent number of *McNaught's Monthly* an article entitled Falling in Hate, a term with which he characterizes the love affairs of the modern heroine in Mid-Western fiction.

* * *

After All is the title of a recent novel by George F. Hummel, published by Boni & Liveright, dealing with the sex question. The author postulates as his explanation of the many unhappy marriages of intelligent and thinking men and women the fact that the two sexes have so widely different a conception of love. He offers no adequate solution.

* * *

One of the notable features of this season's theatrical productions seems to be the replacing of the time worn star system by an excellent caste throughout. This is especially evident in *Outward Bound,* by Sutton Vane, in which half a dozen of Broadway's leading actors and actresses are appearing. Although the interest of the play is almost wholly psychological, the lines and the acting are so clever that we are entertained and intrigued until the surprise at the very end.

* * *

Several of the member organizations of the National Health Council have been cooperating with the National Association of Book Publishers to arouse interest in the literature of health. A book promotion plan was advocated, providing that special emphasis on health books be given during February by libraries, book stores and publishing houses.

* * *

A probably unique morbidity record in experimental medicine was reported by Dr. Edward Francis, of the U. S. Public Health Service, in an address made recently before the Baltimore City Medical Society. In an investigation of tularemia, popularly called rabbit fever, the entire personnel of the Washington laboratory, including himself, contracted the disease. A culture was sent, with a warning, to the Lister Institute in London, where three persons at once became infected.

* * *

An interesting phenomenon in natural history occurring at present is the simultaneous appearance of man eating wolves in many regions of the world. The papers reported not long ago that packs of wolves had been seen for the first time since the Civil War period in northern New York and portions of New England. A large increase in the number of these marauders has been noted in Canada, in the Northern Provinces of which country many hunters and trappers have found it expedient to wear suits of heavy leather, with hat and gloves of the same material, all closely studded with outpointing nails and spikes. In Russia the wolf menace has become so great that all kinds of precautions and protective measures have been adopted by the peasants. This is partly due to the fact that the non-Soviet citizen is prohibited by law from owning or carrying firearms, so he has had to learn to depend on his knife or pitchfork, fire, and many kinds of baits and decoys for protection of his person and home.

Abstracts from Current Literature

CARDIOVASCULAR DISORDERS

Physical Findings in Pericarditis with Effusion.—Roger S. Morris and Carl F. Little (*American Journal of the Medical Sciences,* November, 1923) state that the cardiohepatic angle in pericardial effusion is usually acute; that the area of relative cardiac dullness in effusion is pyriform and generally extends upward to the first interspace; that widening of the area of dullness and of the shadow in the first and second interspaces occurs relatively early in effusion and is best determined with the patient in the recumbent posture; that shifting dullness, i.e., a narrowing of the dull area, with a corresponding decrease in width of the shadow over the great vessels when the patient is changed from the recumbent to the erect posture, has proved to be the most reliable physical sign of fluid in the pericardium; that widening of the dull area and of the shadow to right and left above the diaphragm when the patient is erect is found with fluid; that there is an absence or marked decrease of visible pulsation in the shadow fluoroscopically in pericardial effusion; that dullness at the angle of the left scapula is often present with a large accumulation of fluid in the pericardium.

Changes in the Blood Oxygen Following Therapeutic Bleeding in Cardiac Patients.—Samuel B. Grant (*Journal of Laboratory and Clinical Medicine,* December, 1923) describes a study of the blood of seven acutely decompensated cardiac patients, who were bled purely as a therapeutic measure. This produced an improvement in the peripheral circulation, as shown by a decrease in the coefficient of utilization of oxygen. When the arterial oxygen saturation was considerably below normal, and the heart not so seriously damaged as to be unable to respond to treatment, bleeding was followed by an increase in the arterial oxygen saturation, indicating improved efficiency of the pulmonary circulation.

Capillary Blood Pressure in Arterial Hypertension and in Nephritis.—Ernst P. Boas and Isidor Mufson (*Journal of Laboratory and Clinical Medicine,* December, 1923) report forty-five cases with arterial hypertension, in seventeen of which there was high capillary pressure. The mortality of these patients was much greater than that of those with low readings; eight of seventeen of the former, and five out of twenty-eight of the latter having died. The diastolic pressure is higher in patients with high capillary pressure. Nitroglycerine lowers both arterial and capillary pressures. One case of subacute nephritis out of over one hundred examined showed a high capillary pressure and a normal blood pressure. Autopsy studies brought out the fact that the pathological anatomy does not support Kylin's theory that a high capillary pressure is indicative of glomerulonephritis.

Insulin and the Blood Pressure.—P. Klemperer and R. Strisower (*Wiener klinische Wochenschrift,* September 20, 1923) show that ten units of insulin produce a transient reduction of blood pressure of about twenty to forty per cent. in cases of diabetes associated with hypertonia and increased blood pressure within two hours. In persons with a normal blood pressure (and also in diabetics) the reduction in blood pressure amounted to five to eleven per cent., which may be within physiological limits. If epinephrine solution is injected there results the typical increase in blood pressure irrespective of the previous or simultaneous injection of insulin. Experimentally, the blood pressure is not lowered by the insulin in normal rabbits in spite of hypoglycemia, and it is not lowered in cases of chronic nephritis with increased blood pressure.

A Simple Procedure for Ascertaining Circulatory Efficiency at Different Levels in Gangrenous Extremities.—A. Cosacesco (*Presse médicale,* September 26, 1923) notes that, with modern prosthetic devices, there remains practically no site of election for amputation in gangrene; the thing to be done is to amputate as low as is compatible with proper cushioning of the stump. To determine the proper level for amputation, he draws a fork or the back of a knife blade firmly over the tissues from above downward at various points. After a few seconds of pallor, the usual red vasomotor streak results; it may be accentuated by drawing a moist cotton pledget over it several times. The time of appearance, continuity, intensity and duration of the red streak at various levels is studied. It is late in appearing, absent, or broken up over segments of the limb no longer receiving a sufficient blood supply. Comparative inspection of the line from one end to the other and on all four, or at least the two lateral, aspects of the limb gives a good idea of what circulation remains. The sign always proved satisfactory. At times it definitely showed that amputation could be carried out lower down than had been thought, and in no case was reamputation later necessary, the flaps always having sufficient vitality. No conclusion is to be reached from the test, however, as to the exact level of obstruction in the main arterial trunk; generally the obliterated point is higher up.

Ventricular Complex of Electrocardiogram as a Physical Sign in Cardiac Prognosis.—J. E. MacIlwaine and S. B. Boyd Campbell (*British Medical Journal,* September 15, 1923) show how remarkable the "T" negativity or inversion of the "T" wave is as a prognostic sign of great value. The possible fallacy of the inversion being due to digitalis is excluded.

GYNECOLOGY AND OBSTETRICS

Uterine Curettage: Its Multiple Contraindications and Limited Indications.—Eugene St. Jacques (*Canadian Medical Association Journal,* November, 1923) thus sums up a very vigorous paper:

In chronic metritis usually accompanied by malposition of the uterus and salpingitis, curettage is of no avail and rather harmful. In the dysmenorrhea of the noninfected woman it is equally noneffective; other means must be resorted to. In acute infections following miscarriage or delivery, only in very exceptional cases is curettage to be done, and then in a very delicate manner to remove intrauterine necrotic débris; other therapeutic means are to be associated. In the hemorrhagic class of cases, curettage may be advised. In cancer for microscopical research, and precision of diagnosis only; in very advanced cases the specialist may be called upon to curette and destroy vegetations too hemorrhagic and offensive. These are exceptional cases. In hemorrhage caused by tumors, such as fibromyomata, curettage is seldom harmful but seldom useful. In fact curettage seems to have its principal indications in two classes of cases only; for microscopical examination in doubtful cases of cancer of the corpus uteri, and for remedying profuse and continuous hemorrhage consecutive to delivery or miscarriage. In other instances it is usually useless and generally harmful.

Innervation of the Uterus.—Beckwith Whitehouse and Henry Featherstone (*British Medical Journal,* September 8, 1923) show that the nervous mechanism controlling the uterus consists of three systems; namely, local, sympathetic, and lumbosacral autonomic. The local system can produce rhythmical uterine contractions, and is independent of the sympathetic and autonomic systems, in common with other involuntary muscle. The sympathetic stimuli are motor to the circular muscle fibres and inhibitory to the longitudinal bundles. The lumbar cord stimuli are motor to the longitudinal fibres and inhibitory to the circular fibres. Both autonomic and sympathetic stimuli are controlled by higher centres in the medulla and possibly by the cortex, but are capable of acting independently of the same. Reflexes, both autonomic and sympathetic, are probably important factors in normal uterine contraction. Uterine contractions, to be effective, depend equally upon the integrity and correctly adjusted balance of autonomic and sympathetic impulses. Disturbances in either, whether in the direction of augmentation or diminution, will interfere with the normal course of parturition.

In classical Cæsarean section the advantages of lumbar narcosis, either alone or combined with a general anesthetic, are evident. By elimination of inhibitory stimuli from the lumbar cord and allowing the hypogastric impulses full play, the circular muscle fibers of the uterus contract firmly, and in so doing reduce hemorrhage to a negligible amount. The contraction of the circular fibers also produces more marked eversion of the edges of the uterine incision than occurs normally, and consequently the introduction of the uterine sutures and accurate coaptation of the

cut surfaces is facilitated. When a temporary increase of intrauterine tension is indicated, as in antepartum hemorrhage from premature separation of a normally situated placenta, this may be obtained without risk of inducing labor by means of lumbar cocainization. With placenta previa, although the hemorrhage might be controlled temporarily by contraction of the lower uterine segment, it probably would be increased subsequently, owing to greater separation of the placenta. When the uterus is exhausted, the spinal anesthesia will undoubtedly lessen the tendency to postpartum hemorrhage. For the same reason spinal is preferred to general anesthesia when it is necessary to evacuate the uterus by the vaginal route during the earlier months of pregnancy. Tonic uterine contraction during labor, either general or local, as in the contraction ring and socalled rigid cervix are due to excessive sympathetic stimulation, probably from fatigue of the lumbar centre. Spinal anesthesia should not be used in normal cases of labor, as with it dilatation of the cervix is delayed and the expulsive power of the uterus is diminished and forceps will probably be required.

Indications and Technic of Intrauterine Tamponing.—Emil Eckstein (*Zentralblatt für Gynäkologie,* September 1, 1923) believes that intrauterine tamponing is useful chiefly in checking hemorrhage in anemic women in cases of febrile abortion when emptying of the uterus is impossible. The gauze keeps the cervical os patent and the fetal remnants are removed together with the gauze. The gauze may be left for three to four days after the subsidence of the fever. The indications are the following: In profuse uterine hemorrhages which must be controlled quickly, regardless of whether the cause is uterine disease or retained secundines; retention of secundines with continuous profuse hemorrhage, often for several weeks; in induced abortion from the first to the fifth month; in hemorrhages from postpartum atony of the uterus; retention of secretions postpartum or after abortion, and in febrile abortion, instead of all other forms of treatment, when the retention of secundines cannot be definitely eliminated. It is contraindicated in febrile inflammatory disease of the adnexa and the pelvic peritoneum, owing to the displacement of the uterus and the adnexa as the result of the manipulation.

Treatment of Urethral Gonorrhea in the Female.—Ernst Vey (*Zentralblatt für Gynäkologie,* July 14, 1923), recommends the following line of treatment for urethral gonorrhea in the female: with the aid of a Kelly speculum up to size No. 8 the urethral mucosa is sufficiently dilated without injuring the epithelium and the sphincter muscle and all the folds in the mucous membrane are ironed out. The exposed mucous membrane is then cauterized two or three times at intervals of eight to ten days after sufficient dilatation is secured. It is immaterial what remedy is used for local application, as the results are pretty much the same with silver nitrate, collargol, trypaflavine, and similar preparations.

Physiology of the Placental Bloodvessels.—Walther Schmitt (*Zentralblatt für Gynäkologie,* July 22, 1922) was enabled to show that the bloodvessels of the placenta respond to the influences of temperature, electrical stimulations, histamine, and barium chloride in the same manner as do the bloodvessels of the other organs in warm blooded animals. However, a difference was noted in regard to the action of adrenalin on the bloodvessels of the placenta. This difference leads to the assumption that the anatomical point of attack of the stimulation by adrenalin in the vascular wall differs from that of other stimulations. The great sensitiveness of the placental vessels toward oxygen produces a certain vasodilatation and a displacement of the oxygen, either by carbonic acid or nitrogen, leads to relaxation of the bloodvessels. These facts are of great significance. The author suggests that the dilatation of the vessels in the placenta is controlled by the oxygen and through it the amount of blood circulating through the placenta is regulated. When the pressure of the oxygen sinks, the vessels dilate, more blood circulates through the placenta, and more blood is arterialized, regardless of whether the oxygen exchange between the mother and the child is the result of diffusion or of oxidizing ferments in the placental tissue. If the fetal blood is saturated with oxygen, resulting in a rise of the oxygen pressure, the vessels contract, the amount of blood circulating in the placenta is diminished, and the rapidity of the blood current is increased. These constant variations in the dilatation of the placental bloodvessels provided not only a constant supply of oxygen to the fetus but through it an active propulsion of the fetal blood stream results. This is significant because the placental bloodvessels are not controlled by vasodilators and vasoconstrictors emanating from the central nervous system. The control of the placental bloodvessels is autonomous and the respiratory centre of the fetus is located, as it were, in the placental bloodvessels.

The Significance of the Bacteriological Examination of Lochia in the Treatment of Febrile Uncomplicated Abortion.—As a result of his investigations, Carl Meili (*Schweizerische medizinische Wochenschrift,* September 6, 1923) maintains that the bacteriological examination of the lochia in determining whether a patient afflicted with febrile abortion should be subjected to a conservative or active treatment. If streptococci and liquefying staphylococci are not found in the cavity of the uterus, the ovum or its remains can be removed operatively without injury to the patient. In this way the duration of the condition may be considerably shortened. If, however, the organisms described above are found, the operative removal should be avoided during the febrile stage, and the patient should be treated conservatively as long as the fever persists.

Treatment of Puerperal Tetanus with Intracranial Injections of Serum.—K. Fritsch (*Zentralblatt für Gynäkologie,* September 8, 1923) does not believe that the treatment of puerperal tetanus is futile. He recommends the subdural injection of about five c. c. of tetanus antitoxin (of a solution of 100 antitoxin units) under local anesthesia given through a trephine opening, together with subcutaneous injections and lumbar puncture and the injection of about fifteen c. c. of antitoxin, as well as the administration of enemas of ten c. c. of a twenty per cent. magnesium sulphate solution three times daily.

Studies on the Corpus Luteum of Pregnancy in the Cow.—August Kaltner (*Zentralblatt für Gynäkologie,* September 8, 1923) studied the evolution and involution of the corpus luteum in slaughtered cows. He found that in 295 of 300 cows examined the number of corpora lutea agreed with the number of fetuses in the uterus; in the remaining number there was an excessive number of corpora lutea. In every case the corpus luteum appeared in that particular ovary which was connected with the gravid uterine cornu by its fallopian tube. In no case was the migration of the ovum demonstrable.

Treatment of Perforation of the Uterus.—E. Schwab (*Zentralblatt für Gynäkologie,* September 8, 1923) believes that conservative treatment of perforation of the uterus with rest in bed, icebag, and opium is indicated only under the following conditions: when the perforative injury is slight; in the absence of infection; when there is only a slight possibility of bacterial infection from a decomposed placental tissue; when hemorrhage into the abdominal cavity is slight, and when the presence of a secondary lesion, as in the intestine, bladder, ureter, or a fair sized bloodvessel can be definitely excluded. Active interference is indicated when the conditions mentioned are not found. A delay may result in serious consequences to the patient.

Bladder Stone as a Hindrance to Delivery.—Wolfram Boetticher (*Zentralblatt für Gynäkologie,* July 15, 1922) reports the following case: In a para II, thirty-six years old, the vaginal introitus appeared constricted during the delivery by a bony protrusion which pushed the anterior vaginal wall forward. The protrusion, which was not movable and seemed to spring from the symphysis, was taken for an exostosis. On applying the forceps, a stone as large as a small hen's egg was pushed through the anterior vaginal wall with the delivery of the child and a vesicovaginal tear resulted. The subsequent fistula required several plastic operations for its cure.

Treatment of Severe Uterine Hemorrhage by Radium.—Sidney Forsdike (*British Medical Journal,* September 8, 1923) asserts that radium arrests uterine hemorrhage solely through its action on the endometrium. A prolapsed ovary lying near the uterus would be diagnosed, and, if the condition of the patient was imperative, the exposure to radium would be given with the certainty that the ovary was going to be affected, whereas any mass felt which might bear the interpretation of chronic pelvic peritonitis would be an absolute contraindication, for pelvic inflammation finally negatives the use of radium.

CLINICAL MEDICINE

Studies on the Enzymes of Pneumococcus.—O. T. Avery and Glenn E. Cullen (*Journal of Experimental Medicine,* August, 1923) state that pneumococci possess an active intracellular agent which has the property of causing lysis of the bodies of heat killed pneumococci. The lytic agent is not type specific, since strains of pneumococci serologically different are equally affected. The bacteriolytic enzyme of pneumococcus also possesses to a considerable degree the ability to attack streptococcus of the viridans type. The lytic action of the enzyme was evident in the zone pH. 5 to 8. The action of the intracellular bacteriase is directly proportional to the concentration of the enzyme. Exposure in the water bath to a temperature of 60° C. for 30 minutes destroys the activity of the bacteriolytic enzyme of pneumococcus.

Studies on Pneumococcus Immunity.—Russell L. Cecil and Gustav I. Steffen (*Journal of Experimental Medicine,* August, 1923) were able to demonstrate a complete immunity in monkeys against experimental pneumococcus Type II pneumonia by three subcutaneous injections of pneumococcus Type II vaccine. Likewise protection against pneumococcus Type IV pneumonia was obtained by three subcutaneous injections of vaccine prepared from the same strain of pneumococcus. Only four of eight monkeys vaccinated with three doses of pneumococcus Type III vaccine were protected. The subcutaneous injections of pneumococcus Type II, III, and IV vaccine failed in every instance to produce protective substances in the blood, even when the monkey was immune to infection. William A. Perlzweig and Gustav I. Steffen believe from the experiments reported that the pneumococcus antigen is nonlipoidal, that it probably adheres to the protein fraction in a loose chemical or physical union, rather than representing a protein complex of a large molecular size, as shown by its solubility in alcohol, its thermostability and its resistance to proteolytic digestion.

Significance of Nitrogen Estimations in the Blood in Arterial and Kidney Disease.—Jesse Levy (*Journal of Laboratory and Clinical Medicine,* December, 1923) has attempted to correlate the nitrogen estimations in the blood (antemortem) with the postmortem findings in the kidney. He states that technically though diffuse destruction of the glomeruli is the only renal cause for a nitrogen retention in the blood, it has been shown that the structureless kidney of a chronic glomerulitis, characterized by diffuse disease of the glomeruli, should be so regarded. All kidney pathology dependent upon a primary arterial disease influences the nitrogen metabolism in an indirect way. It is the added burden of kidney pathology which makes the kidney a factor. In the decrescent and intermediary types, the insult to the circulation is a variable one. In the precapillary type, kidney pathology uniformly causes a nitrogen disturbance, and the socalled structureless type is always accompanied with high retentions. Neither structural changes in the kidney independent of their origin, nor diffuse disease of the tubules, can be regarded as a direct source of a nitrogen disturbance. Amyloid disease of the glomeruli only when completely destroying the tuft induces a nitrogen retention.

Glucokinin: An Apparent Synthesis in the Normal Animal of a Hypoglycemia Producing Principle.—J. B. Collip (*Journal of Biological Chemistry,* November, 1923) reports that the blood of a rabbit, dying with hypoglycemia as a result, either direct of indirect, of previous inoculations with a plant extract, is capable of producing profound hypoglycemia and death when such blood is injected into other normal rabbits. When normal rabbits are so inoculated and later die with hypoglycemia the blood of these animals has similar properties. Animal passage would seem to be possible to an indefinite degree. An organism as the causative agent is improbable. The characteristic symptoms, low blood sugar, extreme weakness and general atonia, and convulsions, may be antidoted temporarily by the administration of glucose, but the ultimate fatal issue has not been offset as yet by such a procedure. The following observations are recorded with regard to the nature of the hypoglycemia producing principle: it is active after autoclaving at fifteen pounds pressure. It can be dialyzed. Watery solutions can be concentrated by boiling over a free flame. It is present in the filtrate obtained after treating passage blood with tungstic acid, and it can be removed from passage blood by ammonium sulphate. A lethal dose for a full grown rabbit may be contained in 0.05 c. c. of passage blood.

Variations of the Percentage of Hemoglobin in Man During the Day.—I. M. Rabinovitch (*Journal of Laboratory and Clinical Medicine,* November, 1923) reports observations on twenty individuals in whom the hemoglobin was determined at two hour intervals from 8 a. m. to 6 p. m. Although in a few instances the variations ranged within narrow limits, two cases showed as much as 26 per cent. variation, in four it was from fifteen to twenty per cent., and in six, from ten to fifteen per cent.

On the Phosphorus Compounds in Normal Blood.—Mary V. Buell (*Journal of Biological Chemistry,* May, 1923) states that in normal dog's blood certainly, and in human blood probably, the inorganic phosphates are confined to the plasma and the organic phosphates to the corpuscles. This point of view is not in keeping with the statement that the concentration of inorganic phosphate of serum and of whole blood in fresh specimens is identical.

Formaldehyde-Gel Reaction in the Diagnosis of Syphilis.—Robert A. Kilduffe (*Journal of Laboratory and Clinical Medicine,* March, 1923) compared the formaldehyde-gel reaction of Gate and Papacostas with the Wassermann reaction in a series of 480 sera. Of these, 80 gave positive Wassermanns. With the formaldehyde test 170 were positive; of these only forty occurred with the Wassermann positive sera, the reaction being entirely negative with fifty per cent. of the Wassermann plus sera. Of the 400 sera negative to the Wassermann test, 130 gave positive formaldehyde reaction. It is obvious that the formaldehyde-gel reaction will give negative results in syphilis, and positive results in the absence of it in a sufficiently high number of cases to make it extremely unreliable as a means of diagnosing that disease. The test should therefore not be used for the purpose.

Electrolyte Content of the Red Blood Corpuscles. The Findings in Chronic Anemia and Polycythemia.—Thomas E. Buckman, W. Richard Ohler, and Louise L. Doherty (*The Journal of Medical Research,* September 1923.) The cases studied include only those in which the plasma volume was within normal limits, and comprised seven normal men, nine patients suffering from severe, long standing anemia, five persons showing a mild degree of chronic anemia, and four individuals showing a chronic erythrocytosis. The results obtained indicate a relationship between the electrolyte content of the corpuscles as measured by the specific conductivity of a clear solution of their products of hemolysis and the concentration of the corpuscle in the peripheral blood as measured by the hematocrit. The specific conductivity of the blood serum is almost a constant. In the cases reported, the electrolyte content of the corpuscle was proportional to the per cent. volume of the corpuscles.

Studies in the Physiology of Muscular Exercise.—David P. Barr (*Journal of Biological Chemistry,* May, 1923) obtained a continuous record of the volume of respiration of four normal men before, during, and after exercise, corresponding to approximately 3500 kilogram metres in three and one half minutes, and studied the blood reaction of three of them accompanying exercise. No constant relationship between reaction and respiration can be demonstrated from these observations. Following exercise, when the minute volume was rapidly decreasing, the acidosis of the arterial blood remained essentially the same or even decreased. A study of the literature shows that evidence has accumulated which indicates that the reaction of the blood does not furnish as specific and delicate control of respiration as was originally supposed.

On the Existence of More than Four Isoagglutinin Groups in Human Blood.—C. G. Guthrie and J. G. Hu (*Bulletin of the Johns Hopkins Hospital,* April, 1923) examined blood from two hundred persons during three months, performing 1282 macroscopic and 3570 microscopic tests. The results of this work have led them to believe that the classification of blood groups is not so simple nor the number of groups so limited as has generally been believed. This last paper of the series contains a summing up of their conclusions, among which may be mentioned the following: The presence of only two isoagglutinins and two isoagglutinogens in human blood is inadequate to explain their findings. By direct tests and by absorption experiments, the existence of a third isoagglutinin and a third isoagglutinogen has been demonstrated. Although recognizing the possibility that there may be still other isoagglutinins and isoagglutinogens in human blood, the

have found nothing so far to indicate their existence, but their observations have shown that there are *at least* three of each. With three isoagglutinins and three isoagglutinogens there are twenty-seven combinations biologically possible. It is believed that these findings have a practical bearing upon transfusion and furnish a plausible explanation for some of the hitherto unexplained posttransfusion reactions. Allowance has been made for the possible occurrence of autoagglutination, which it is believed has not been a complicating factor in the results. The grouping of blood should be determined on a basis of their agglutinin-agglutinogen content. Only bloods with the same agglutinin-agglutinogen content belong to the same group. Methods for the classification of blood groups are suggested.

Inorganic Salt Metabolism.—E. G. Gross (*Journal of Biological Chemistry,* April, 1923) produced tetany in dogs, and marked changes in the ionic balance by the subcutaneous injection of sodium oxalate. Citrate did not produce these changes. The sodium, chlorine and calcium are decreased, the first two in about the same proportion, while the phosphorus and potassium are increased, also in about the same proportion. The magnesium was uninfluenced.

NEUROPSYCHIATRY

Drug Therapy of Anxious States.—Ludwig Stein (*Wiener klinische Wochenschrift,* August 30, 1923) proceeds from the premise that anxious states are due to a hyperemia of the subcortical centres of the brain, and he, therefore, endeavors to correct these suspected circulatory disturbances. As a matter of fact, he obtained good results with cardiac tonics, especially digipuratum, in several cases. The most striking results were obtained in a case of a severe psychosis of anxiety with 0.0005 gram of nitroglycerin.

Decompression and Ventricular Puncture.—J. A. Barré and P. Morin (*Paris médical,* October 6, 1923) find that in decompression operations the pressure of the cerebrospinal fluid begins to fall while the first trephine opening is being made and before there has been any actual osseous decompression. It continues to fall rapidly throughout the first stage of the operation and shows but little accentuation when the piece of skull is actually removed. Nevertheless, the total reduction of cerebrospinal pressure is not marked unless the dura is opened; the pressure may remain decidedly high in spite of the operation. The operation relieves the headaches as long as the dura is sufficiently dilated or distensible to deaden the attacks of hypertension, and does this in spite of the average tension remaining high. In view of the fact that the tension may remain dangerously high in spite of the fact that the patient seems out of danger, it is very useful, to avoid a false sense of security to make determinations of the cerebrospinal pressure during the operation and a few days later. In cases exhibiting pressure manifestations alone, without localizing signs, it seems best to give preference to ventricular puncture—followed by drainage if necessary—over an extensive decompression operation which, even in the most favorable cases, leaves the patient's skull defective. Or, ventricular puncture and decompression may be combined where this seems indicated.

Effect of Time Between Obtaining a Spinal Fluid and Making a Cell Count on the Result of the Count.—James Wynn (*Journal of Laboratory and Clinical Medicine,* February, 1922) counted eighty spinal fluids at varying intervals up to fifteen hours. The cells in clear spinal fluids, collected in clean tubes and tightly stoppered, may safely be counted at the end of that time, if thoroughly mixed, and in the absence of macroscopic pellicle, sediment or web. Whether the tubes are kept at room temperature or in the ice box makes little difference. In two cases of meningitis the thorough mixture of small quantities of powdered sodium citrate with the fluids made it possible to duplicate the original cell counts within the limit of technical error at three and fifteen hour intervals. However, this procedure must be tried in a large series of cases before any conclusions are warranted concerning such citrating of fluids.

Cause of Socalled Idiopathic Hydrocephalus.—Walter E. Dandy (*Bulletin of the Johns Hopkins Hospital,* March, 1921) presents this article to establish proof of the cause of communicating hydrocephalus, i. e., of the type in which all the ventricles are in communication with the arachnoid space. During extensive studies on the absorption of cerebrospinal fluid in hydrocephalus it was found that in the communicating type the absorption from the subarachnoid space was greatly reduced. A reduction in the amount of the absorbing spaces which are reached by the cerebrospinal fluid was suspected as the cause and a hypothetical pathology was suggested along this line of reasoning. Later, a study of four cases of communicating hydrocephalus at necropsy showed that in each adhesions were found which obliterated the cisternæ, therefore it was assumed that by preventing the cerebrospinal fluid from reaching the great absorbing spaces over the cerebral hemispheres, these adhesions had caused the hydrocephalus. From his study Dandy comes to the following conclusions: The cause of communicating hydrocephalus (the remnant of socalled idiopathic hydrocephalus) is an obstruction in the cisternæ which has been conclusively demonstrated in three ways: 1. Experimentally communicating hydrocephalus can be produced by blocking the mesencephalic cisterna. 2. The obstruction can be graphically demonstrated in the experimental animal or at necropsy in the human by injecting a suspension of India ink into the spinal canal; the color stops abruptly at the obstruction. 3. In all living patients the obstruction can be clearly shown by cerebral pneumography after air has been injected into the spinal canal; the air also stops at the obstruction, and can be sharply outlined in the röntgenogram. The obstruction in the subarachnoid space is most frequently located in the mesencephalic or pontine cisterna. However, the obstruction need not necessarily be in the cisternæ; it may be in the large branches which carry the fluid from the cisternæ chiasmatica and intrapeduncularis to the cerebral sulci. Any number of these branches may be occluded. If all the main branches are obstructed, the hydrocephalus will be the same as if the occlusion were in the cisterna. If some of the branches remain unobstructed, the degree of hydrocephalus will be modified proportionately; a complete cure may even result because of the absorption which takes place in the remaining patent areas of the subarachnoid space. Adhesions following meningitis and occluding the cisternæ cause the vast majority of cases of communicating hydrocephalus, and many cases of obstructing hydrocephalus by blocking the foramina of Luschka and Magendie. Adhesions give infallible proof of a preexisting meningitis. In two cases the hydrocephalus appeared to be due to a congenital failure of the cisterna or of its branches to develop. Tumors in the pons, medulla, or mid-brain also produce partial or complete obstruction of the subarachnoid space and therefore cause communicating hydrocephalus.

Space Compensating Function of Cerebrospinal Fluid; Its Connection with Cerebral Lesions in Epilepsy.—Walter E. Dandy, (*Bulletin of the Johns Hopkins Hospital,* August, 1923) observed the brains in a series of seventy-five epileptics at operation, exclusive of a large series of cases in which convulsions occurred in patients with brain tumors, abscesses, foreign bodies, etc., from a study of which he presents evidence of the frequent presence of gross organic lesions in epilepsy. The changes that may be detected before or during the operation are dilatation of the ventricles, abnormally shaped ventricles, dilatation of the subarachnoid spaces, softening of the brain (atrophy), areas of increased density (fibrosis or gliosis), and changes in the meninges. The author believes that these are evidence of actual cerebral lesions (end products of repair), and their frequent finding has led him to the conclusion that there is a pathological basis for socalled idiopathic epilepsy in a large proportion of the cases. This view is confirmed by ventriculography, which in a certain number of cases shows acquired or congenital distortion of the ventricles.

Hysterical Fits and Their Treatment.—Lewis R. Yealland (*Lancet,* September 15, 1923) states that a diagnosis between hysterical fits and epilepsy is difficult and sometimes impossible if no seizure is witnessed. Although hysterical fits have been produced by suggestion aided by electricity, the latter is certainly not necessary and the need of the former is doubtful. These fits have been produced by simple passive resistance against movement of a limb. An attack seems always to follow a certain state of tone of the muscles, which is created by simultaneous contraction of agonists and antagonists. Cloniclike movements occur in many neurasthenic individuals subjected to passive resistance and these show the same distressed facial expression. This test is of considerable diagnostic importance and is easily elicted. The treatment is symptomatic and the period of freedom from the attacks has been found to vary between five years and six months. The recoveries amount to about sixty per cent.

MEDICAL JOURNAL AND RECORD

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Medicolegal Notes.

REFUSAL TO TAKE PHYSICIAN'S ADVICE

As a result of holding cloth taut and straight while it passed over a roller, a blister developed on an employee's thumb and broke, and shortly afterwards the thumb became infected. She went to the employer company's doctor, who treated her, and asked her to take a certain course of treatment, including lancing the thumb, which she refused to do. She subsequently went to her own family doctor, who put on antiseptic dressings, and, finding the thumb badly inflamed and in a serious condition, advised making an incision to drain the pus. This she would not allow, and consulted the insurance company's physician, who, after taking an x ray, told her she should have the thumb partly amputated, which she also refused to allow.

The Illinois Supreme Court, Western Shade Cloth Co. v. Industrial Commission, 308 Ill. 554, 140 N. E. 45, holds that the injury was an accident, traceable to the employee's work, but that she should not have been allowed to recover for permanent loss of seventy per cent. of the use of the thumb without some showing that the permanent loss was not caused by her nelecting to follow the advice of the physicians. It was reasonable to assume that if she had accepted their advice and taken the treatments the injury would not have been as serious as it turned out to be.

TUBERCULOSIS HELD PERMANENT DISABILITY WITHIN MEANING OF INSURANCE POLICY.

The New York Appellate Division holds, Ginell v. Prudential Ins. Co., 200 N. Y. Supp. 261, that tuberculosis is a permanent disability within an insurance policy against "permanent disability," which provides that if the insured recovers from such state of disability no further payments shall be made by the insurer. "In using such language the parties must have understood that the disability, though permanent, might not continue. The inexorable inference to be drawn as to the meaning of 'permanent' is that it is applicable to a condition of disability which, while not transient or ephemeral, still may pass away.

"The sense in which the word 'permanent' is used in the policy is that of its Latin derivation—*per*, through; *maneo*, to remain. The policy covers disease in which disability may remain. Tuberculosis is such a disease. It is difficult to say whether its arrest may be accomplished. It is a fixed disease, permanent in its nature, and involving permanent or fixed incapacity in its victim to work for a long period of time at best."

Two judges dissented on the ground that the policy should not be construed to include tuberculosis as a permanent disability.

EXPERT OPINION AS TO WHETHER ACCUSED USED MARIHUANA PRECEDING HOMICIDE HELD INADMISSIBLE.

In a prosecution for murder it was suggested by the defense that accused was a marihuana smoker and that from the effects of this drug he had developed a homicidal mania. It was a testimony by a physician that the use of marihuana in excessive quantities would produce a state of mind similar to delirium tremens, and he said that if accused was under the influence of that drug at the time of the homicide, in his opinion he would not know the right or wrong of the act charged against him. There was evidence that on the night preceding and four days before the homicide, accused had smoked cigarettes, which "did not look or smell like good tobacco," and that fifteen years before he had asked witness to get him some marihuana.

Accused then placed another medical witness on the stand, who testified that he had observed the effects on persons of the use of marihuana. The facts attending the homicide were then stated to him, as well as the testimony as to accused's smoking cigarettes, and he was then asked, assuming such testimony to be true, would he conclude therefrom that the cigarettes smoked on the night preceding the homicide were marihuana or not. The State's objection to this testimony was sustained by the trial court. The Texas Court of Criminal Appeals holds, Cadena v. State, 251 S. W., 225, that the testimony was inadmissible. The doctor as an expert witness could state what condition of the mind would follow the use of marihuana. The fact of the use of such drug, and the amount and quantity of such use, could be proven by witnesses who knew such facts. But expert opinions must be limited to matters of science, skill, trade and the like, and will not be allowed to usurp the province of the jury on matters of fact of which the jury are made the judges by law.

PHYSICIAN'S TESTIMONY ADMISSIBLE THAT WOUNDS COULD HAVE BEEN CAUSED BY WEAPON IN HANDS OF MAN.

On a murder trial, where the defendant was accused of striking the deceased, a woman, with a chair, a physician who had qualified as an expert was permitted to testify that, from his examination of the wounds or discolorations found by him on the deceased's body, these could have been made by a chair with a board nailed on the front an inch thick and two or three inches wide, in the hands of a man such as the accused. The Texas Court of Criminal Appeals, Perison v. State, 251 S. W., 1092, held this no error, since the question as to whether the injury could have been inflicted by the chair was not one of which the jury were as competent to judge as the physician.

MUNICIPAL HOSPITAL NOT LIABLE FOR EMPLOYEE'S NEGLIGENCE.

The Tennessee Supreme Court, Wallwork v. City of Nashville, 251 S. W., 775, follows the authorities in holding that a charitable municipal hospital is exempt from liability due to the negligence of its employees, even when fees were paid by the patient. The negligence alleged was the placing of a scalding hot water bottle in the patient's bed by hospital employees before she recovered from the effects of an anesthetic while undergoing an operation, severely burning the patient's feet. There was no claim that the city and hospital commissioners did not exercise ordinary care in selecting the employees.

MEDICAL WITNESS TESTIFYING THAT FROM EXPERIENCE MEANS FROM PROFESSIONAL EXPERIENCE.

In a personal injury case where the principal injury was to the plaintiff's knee, the attending physician found the knee swollen and very painful to the touch. In his opinion, one or more of the ligaments had been strained or turned. Speaking from experience, he said that the knee joint, when once hurt, remains more or less weak. In doing straining work, it becomes painful and loses a part of its mobility. According to his best judgment, the injury to plaintiff's knee would be likely to last through his life. On the other hand, the physicians who testified for the defendant company said that plaintiff's knee had been completely cured. It was insisted for the defendant that because the attending physician used the words, "I am speaking just from my experience," his evidence was of no greater value than that of a layman. The Kentucky Court of Appeals, however, in American Ry. Express Co. v. Lancaster, 251 S. W., 670, held that it was evident that the witness spoke from his experience as a physician and that such experience would add weight to, rather than detract from, the value of his testimony.

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Certain Aspects of Focal Infection Commonly Misunderstood*

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The various diseases referable to focal infection, and demonstrated experimentally to be the result of elective localization of streptococci, are so extensive as to embrace almost every field of medicine. It is, therefore, of paramount importance that the general practitioner as well as the specialist, should be cognizant, not only of the more important facts relating to pathological changes, but of the special methods of experimental investigation employed.

When the etiology of a certain disease suspected of being referable to focal infection is investigated, the procedure is not, as one might suppose, to obtain from the focus pure cultures of the various types of bacteria present, and by injecting these into experimental animals, ascertain which will reproduce the disease. Instead, all the bacteria are collected and injected into experimental animals, and if the disease under investigation is reproduced, the causative organism is then obtainable from the lesion produced. Thus the animal, acting as a filter, conserves the infinite time and patience that would be necessary to culture and subculture the original mixed focus in order to obtain pure strains. More important than the saving of labor is the fact that many bacteria are extremely sensitive to various degrees of oxygen tension, and if the usual cultural methods of plating on blood agar and isolating the suspected microorganism in pure culture are followed, many organisms and often the causative ones, will die because of the aerobic conditions.

When the focus furnishes sufficient tissue exudate or purulent discharge to make it feasible, the ideal method is to inject this infected material directly into the experimental animal. Often, however, as in the case of a devitalized tooth, the focus is not in a physical form to make this possible, or the technical difficulties of having the laboratory animals immediately available are so great as to make this method of direct injection impossible. Under such conditions, primary cultures must be made in a culture medium having a graded oxygen tension. This is accomplished by using glucose broth in which small pieces of brain tissue have been placed. "The bottom of the tube is rendered anaerobic while the top necessarily remains aerobic and the space between represents a gradient of oxygen pressure intermediate between the two extremes." (10) Cultures from this material after proper incubation may be used for injection, with the assurance that all organisms have obtained the environment most congenial to their growth. As it is important to take the utmost care in rendering this environment correct, it is equally important to take the same care in obtaining the material cultured. The surface of a tonsil will naturally be the habitat for the saprophytes and aerobic bacteria, while those that are anaerobic are only obtained from the depths of the crypts. Therefore, extreme pressure must be exerted on the tonsil to obtain the infected material in order to be sure that the bacteria from the depths, as well as those from the surface, are obtained. This is best accomplished by placing a throat mirror on the posterior aspect of the tonsil and exerting considerable pressure as the patient gags. The pharyngeal muscles, in contracting, squeeze the tonsils and express material often not suspected of being present. By this method, deep abscess pockets may break and discharge their purulent contents on the surface of the mirror which serves as the receptacle for their collection. This attention to the anaerobic properties of infective organisms cannot be too strongly emphasized, since its neglect undoubtedly accounts for many experimental failures. It is also not generally appreciated how delicate many of the most virulent organisms are, and how readily they are destroyed. Chilling the culture mediums between the time of implantation and incubation may render experimental results negative; therefore, care should be taken to incubate the cultures as soon as possible. It is probable that this extremely low vitality of the bacteria keeps many infections from producing great destruction to life, yet because of their extreme virulence under favorable circumstances, we are apt erroneously to consider such organisms as comparatively resistant.

If the methods described are followed, if lesions are produced in the experimental animal similar to those occurring in the patient from whom the material was obtained, and if from these lesions new cultures are obtained which, on second animal passage, again produce a like lesion, all the requirements

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of Koch's law are fulfilled. Rosenow and his coworkers, following these methods, have now produced the most striking results in cases of appendicitis, cholecystitis, duodenal and gastric ulcer, encephalitis, poliomyelitis, epidemic hiccough, pyelonephritis, nephrolithiasis, cystitis, iritis and other diseases. The list of diseases is so large that at first it seems to the scientist incredible and to the layman ridiculous, that so many human ills should originate from almost a single source. Yet when it is considered that the infection is through the blood and lymph, which reach every minute part of the body, the multitude of different diseases possible is evident. It has been estimated that one fourth of the human race have septic mouths at the age of twenty-five; at forty-five the number has increased to ninety per cent, and after fifty, practically all mouths are septic. When it is considered that with every bite of the jaw, bacteria around the roots of septic teeth are pumped into the circulation, the fact that we have so few, rather than so many diseases, is the marvel.

In order to study or treat such disease, the closest possible cooperation must exist between the various specialties. I am most interested in the subject as it touches my specialty, urology, and in association with Meisser of the section on dentistry, at the clinic, working in Rosenow's laboratory, I had the pleasure of demonstrating experimentally the relationship of various urological infections to focal infection. Unfortunately, such cooperation is not always obtainable, chiefly, I believe, because certain of the most important aspects of the teeth as a focus are not appreciated. The use of the röntgen ray by the dentist has become general, but the films are frequently misinterpreted, and like all aids to diagnosis, the ray is now too often regarded, not as an aid, but as the diagnosis itself. Teeth that show no changes discernible by the röntgen ray may be dead, but only a routine test of their electric sensitivity will demonstrate their lack of vitality. In other cases, the disease process may be in such a location as to be undiscernible in an examination of the films, so that while a routine full mouth röntgenogram is essential to accurate diagnosis, it should not comprise the entire examination, but should be associated with a most painstaking physical examination of each tooth. There is, I believe, no diversity of opinion concerning the advisability of removing a tooth that shows a definite apical abscess with considerable destruction of bone, but the fact seems to be overlooked that before such destruction occurs, myriads of bacteria must have existed around the root of the tooth, and that not until the process is far advanced, will sufficient destruction of bone occur to be demonstrable by the röntgen ray.

In several series of experiments, Meisser has demonstrated that bacteria from röntgenologically negative, devitalized teeth yield the same type of microorganisms as röntgenologically positive teeth, which on animal inoculation show the same selective action.

In our study of pyelonephritis, a culture obtained from a devitalized but otherwise negative tooth showed the highest elective affinity for renal tissue of any that we studied; yet often when I send patients to their home dentist for the removal of all abscessed and pulpless teeth revealed by the röntgen ray, he readily agrees to the removal of the abscessed teeth, but inasmuch as a pulpless and otherwise negative tooth may be all that remains to which can be attached a bridge and alone stands between the patient and an artificial denture, he demurs. In fact, he may show the patient the röntgenogram, point out the benefit to be derived from the removal of teeth with large periapical abscesses clearly discernible, show that the osseous tissue around the pulpless tooth appears excellent, and obtain the patient's consent to the retention of the tooth in the interest of reconstruction, thus discrediting the previous advice. He does not inform the patient that no röntgen ray machine has yet been constructed that will make a single bacterium or even several thousand bacteria cast a shadow, and that not until millions of bacteria have lived and died will there be sufficient periapical necrosis to be demonstrated röntgenographically. He probably misunderstands this aspect of focal infection. While in this type of cases error occurs through misinterpretation of the findings of the röntgen ray, in another type its neglect is responsible for error. Patients may be questioned regarding teeth, only to reply with a smile that they all have been removed for some years; the physician must then search elsewhere for a focus. Eusterman, in a study of 290 edentulous or partially edentulous mouths, found 129 roots or other evidence of residual areas of infection. Because the old methods of removing teeth did not permit the elimination of all the teeth and their associated lesions, he believes that thirty-seven per cent. of the areas to which plates are adapted will be found to harbor infection. Thus the importance of röntgen ray examination of edentulous mouths is evident, and teeth as a possible focus cannot be excluded simply because they were all pulled years before.

The granuloma resulting from periapical infection is frequently regarded as nature's method of protection, and rightly, but it is far from perfect, for sections of granuloma show that they contain countless numbers of bacteria in close proximity to the area of new bloodvessel formation, the most satisfactory association for rapid and constant systemic infection. The bloodvessels in such granuloma immediately adjacent to clumps of bacteria are frequently found to be filled with the infecting organisms.

Having called attention to the most common sources of error respecting the teeth as a source of infection, I will refer to the tonsils. At the Mayo Clinic the grading of pathological processes, or the size of organs on a basis of one to four has been found to be of considerable aid. The small tonsil, size one or two, on superficial examination appears to be harmless, while size three or four, by its size and projection into the throat, will often be recommended for removal. From the viewpoint of the otolaryngologist, this is undoubtedly sound advice. From the viewpoint of focal infection, however, the reverse is probably correct. The small tonsil is usually buried deep in the tissues, and it may be difficult or impossible to demonstrate that it harbors infection, although its buried location makes absorption from its crypts easy. The large tonsil, on the other hand, by its pendant position tends to drain into the throat, and the noxious exudates and bacteria, being swallowed, are rendered comparatively

harmless. However, this simple truism seems to be completely ignored by many. The patient is found to have a disease referable to focal infection, and on examination of the throat, is assured that the tonsils are not the focus, for they are small, nothing can be expressed and they are not inflamed. I believe that such a negative report from the viewpoint of ruling out the tonsils as a focus is worthless, and may instead indicate that they are the source. It is impossible to be sure that the tonsils are not a focus of infection by any means now at our disposal, and only a positive finding of expressible pus is of value. The larger the tonsil, the less likely it is to be a focus; the smaller the tonsil, the more likely it is to conceal deep in its substance an unsuspected pus pocket.

Another aspect of focal infection apparently generally misunderstood is the belief that benefit should result from the partial removal of foci. Physicians often say, "The experimental work appears sound and the theory is excellent, but in practice it simply doesn't work. I have removed the tonsils in many cases with no improvement in the disease." On questioning, it may be found that the tonsils were the only focus removed, the teeth being neglected, or the teeth may have been removed and the tonsils allowed to remain. In the study of focal infection in a series of eighty cases of arthritis, Brock found that forty-two patients had had possible foci removed, and that in all, demonstrable foci were still present. Twenty-five patients of the series had their tonsils removed, in twenty-two of which infected teeth were still present. It is obvious that such instances represent the disappointment of the unrelieved patient and of the physician who does not obtain the results desired from the removal of the tonsils.

Partial removal of foci will not bring even partial relief of symptoms, only complete removal can hope to accomplish this; the most painstaking care must be exercised in order that no tonsillar remnant remains. The importance of removing all tonsillar tissue is shown by the following case which was previously reported in collaboration with Meisser.

REPORT OF CASE

Case I. (A348635).—Mrs. C. E. B., aged thirty-six years, came to the clinic February 5, 1921. For a number of years she had had frequent attacks of grippe and tonsillitis, for relief of which tonsillectomy had been performed in 1916. In 1912 the round ligaments had been shortened and the appendix removed. The patient then manifested increasingly frequent urination, which persisted without relief. It was not associated with burning, but before and after micturition there was a dull ache throughout the bladder. Nocturia had increased until the patient voided from five to six times at night. On two occasions during the last two years there had been slight gross hematuria. On physical examination the bladder was found to be tender. Uranalysis revealed an occasional erythrocyte and a few pus cells. The röntgenogram of the teeth was negative. Examination of the nose and throat was at first reported negative. The patient, however, insisted that tonsillar tissue was still present, and on her urgent plea for a more careful search, a second examination revealed that the tonsils had been removed cleanly except for a slight remnant on the lower pole of the right side. On cystoscopic examination, an area of hyperemia was found on the posterior wall of the bladder near the dome, surrounded by edema. A diagnosis of submucous ulcer of the bladder was made. On February 15th, the involved portion of the bladder was resected. The pathologist reported a submucous ulcer seven mm. in diameter.

Cultures were made from the remnant of the right tonsil before its removal, and many green producing streptococci and staphylococci were found. With these cultures two animals were injected. One died soon after the injection. In the other innumerable small hemorrhagic lesions developed in the bladder; there was no evidence of lesions in other organs. The remnant of the right tonsil was removed and cultures made from the emulsion. Again the green producing streptococcus was the predominating organism. Three rabbits were injected with these cultures, two of which had innumerable hemorrhagic lesions, varying from 0.09 to 1.5 mm. in size. The third rabbit had a few hemorrhagic lesions in the bladder, and pronounced lesions in the medulla of the kidney. Such an area of infection was overlooked in our routine examination, and yet if it had not been ultimately discovered, little permanent benefit would have resulted from the resection of the ulcer bearing portion of the bladder. The disease must of necessity have recurred if the focus had persisted.

Thus does the subject of focal infection enter the field of preventive medicine although its importance is hardly recognized. Yet the physician or surgeon has not done his duty who has merely relieved the patient temporarily of a pathological lesion, the cause of which the patient is allowed to retain. Eusterman (4), in a recent paper on recurrent ulcers of the stomach and duodenum, says, "the theory that infection is the cause of ulcer is admittedly the only tenable one at this stage of medical progress," and "the radical removal of all possible foci has repeatedly caused subsidence of gastrointestinal disturbances, and evidence of increased healing of otherwise refractory ulcer." In a series of thirty-two patients with recurring gastric or duodenal ulcer studied by him, twenty-nine harbored extensive foci, especially in the teeth and tonsils, or both, a fact which he considers more than coincidental. He cites a typical case in which the patient had had posterior gastrojejunostomy for duodenal ulcer and appendectomy in June, 1921, and had remained well for one and a half years. His teeth and tonsils were septic and although treatment was advised, it was not carried out. Symptoms recurred, and röntgenograms revealed evidence of ulcer on the lesser curvature, also partial lack of patency of the gastroenterostomy stroma signifying early gastrojejunal ulcer. The tonsils, from which pus was expressed, and four pulpless teeth with well marked area of rarefaction, were removed. Ulcers were produced in thirty-seven of forty-four animals injected with cultures from these foci. Coincidental with the removal of the foci of infection the patient recovered and has remained well. Prophylaxis in the form of the removal of all foci must evidently be combined with surgery in such cases if results are to be obtained

that will bring credit rather than disrepute to the profession.

In the practice of urology, equally striking results have been achieved experimentally, and many aspects of focal infection in relation to urinary infections clarified. Infection in any part of the urinary tract, as a rule, is characterized by a predominance of colon bacilli, although their mode of entry remains obscure. Their predominance is, I believe, responsible for the delay in accepting the idea that focal infections can cause disease of the urinary system.

Le Fur, in 1901, had attempted to produce vesical ulceration by the intravenous injection of various bacteria into laboratory animals. The results were so unsatisfactory that he abandoned this technic, and injected the organisms either directly into the bladder or into the perivesical space. He used ten strains of bacteria, including the streptococcus, pneumococcus and colon bacillus. After injecting the colon bacillus he recovered the organism in pure culture, but after injecting the other bacteria, the original strain was invariably found to have become associated with colon bacilli, although none had been injected. In three cases, although other bacteria had been injected, colon bacilli only were recovered. These results brought out two important points, first, that the intravenous injection of colon bacilli seldom causes the production of localized lesions, and second and more important, that after the injection of other bacteria, which results in lesions of the urinary tract, the colon bacillus is often found as a secondary invader. These facts would explain why dental and tonsillar sepsis, which seldom is associated with colon bacilli, and which is so commonly found in patients suffering with pyelonephritis, might produce infection of the urinary tract in which the outstanding organism is the colon bacillus.

A group of twelve patients at the clinic suffering with pyelonephritis were selected, who had a history of fairly recent tonsillar or dental sepsis, and in whom such foci were considered to be still active. Eighty-two animals were used; fifty-three were injected with the primary culture of tooth or tonsil, eleven with bacteria obtained from the urinary tract of the animals injected with the primary culture, six with bacteria from this second animal passage, two with cultures from the blood of patients, and ten with cultures from the urine of patients. Lesions were found in the kidneys of sixty-three of the animals. The record of one patient in the series is so interesting as to warrant reporting.

REPORT OF CASE

Case II. (A344376).—Mrs. M. H., aged forty-five years, came to the clinic complaining of bladder trouble. Three weeks before, at the onset of her menstrual period, she had noticed slight irritation at the neck of the bladder and burning at the end of urination. Two or three days before she had been up all night with a daughter suffering with tonsillitis. She became chilled and had a sore throat for the next few days. The bladder trouble grew gradually worse, and the local physician attended her for the next two weeks, during which time her temperature ranged from 99° to 104.5°; the night before she came to the clinic it was 104.5°. She complained very little of pain, except that occurring at the end of urination; she felt a slight soreness around the crest of the right ilium. Cystoscopic examination had been made two days before, and inflammation was found around the right ureteral orifice. Colon bacilli were recovered from the urine. A diagnosis was made of mild cystitis.

Examination revealed slight tenderness in the right abdomen and over the crest of the right ilium. The temperature was 101°. Röntgenograms revealed evidence of periapical infection in four teeth. One was devitalized, but the röntgenogram was negative; the pulp was exposed in two teeth. From the tonsils, which were not greatly enlarged, fluid pus was expressed. An occasional red blood cell and a large amount of pus were found in the urine. Stained specimens were negative for tuberculosis bacilli. Röntgenograms of the urinary tract were negative. Two cystoscopic examinations, made before the suspected foci were removed, proved negative, but the urine recovered from the kidneys contained pus and gave a pure culture of gram negative bacilli. Three rabbits were injected with a culture of these bacilli, and in none could evidence of lesions be found. The day after the second cystoscopic examination, two of the teeth with apical abscesses were removed, and cultures were made on blood agar plates, and in glucose brain broth. In both, green producing streptococci were isolated on the blood agar plates. A few colonies of staphylococci were also present. Three rabbits were injected; all had lesions of the kidney and one had multiple minute hemorrhages (?) in the right ureter near the pelvis of the kidney. Streptococci in pure culture were removed from these lesions. The patient experienced no immediate reaction, such as often occurs following the extraction of infected teeth, although for the next few days her temperature reached 101°. Six days later three other teeth were removed, including one which did not show evidence of apical infection in the röntgenogram, but which had been devitalized and the root canal filled. All gave pure cultures of green producing streptococci. These were injected into three rabbits, and resulted in lesions of the kidney in two, one of which had been injected with bacteria from the devitalized, but otherwise negative tooth. The third rabbit did not have lesions. The day following the removal of these teeth, the patient had a severe chill, and her temperature reached 106°; profuse sweating and falling temperature followed. During this reaction a blood culture was taken and large numbers of a green producing streptococci were recovered. Two rabbits were injected intravenously with samples from this culture. Lesions in the kidneys developed in both, and cultures made from these lesions yielded green producing streptococci, while cultures from the gallbladder, blood, spleen, liver and so forth, were negative. The febrile attack was so acute and severe that doubt was expressed with regard to its renal origin. The possibility of its being a respiratory infection was suggested, although there were no pulmonary symptoms. In order to clear this point, cultures were injected directly into the trachea of five guineapigs. At necropsy no pulmonary lesions were found, but in one guineapig the kidneys and ureter were markedly involved.

Urine obtained from the bladder the day of the chill, the following day, and the fourth day, con-

tained only colon bacilli. On the fifth day, however, when the patient had recovered sufficiently to permit cystoscopy, the urine obtained from the kidney and bladder contained occasional streptococci, but far greater numbers of colon bacilli. Samples of the mixed cultures were injected into five rabbits; and in three lesions of the kidneys developed. Streptococci and colon bacilli were recovered from the lesions in two rabbits; the other three had lesions in the intestines.

In order to study the relative ability of the two organisms to grow in urine, a twenty-four hour sample of the patient's urine was autoclaved on three occasions, and, after being proved sterile, samples were inoculated and incubated with colon bacilli, with streptococci, and with both. It was found that while the colon bacilli multiplied readily, the streptococci had no such ability, and only a few more than were planted could be recovered. This probably explains the usual absence of the etiological organism in the urine of patients with pyelonephritis. Occasionally, as in the case reported by Kretschmer, secondary colon bacillus infection does not occur, and streptococci are obtained in pure culture.

Eighteen days after the second extractions, the patient's remaining infected teeth were removed without incident. Pure cultures of streptococci were recovered. Four animals were injected; in two lesions of the kidney developed, one very pronounced; one had lesions of the joints, the uninfected organs being sterile. During the intervals between the extraction of her teeth the patient was cystoscoped four times, and at each examination pus cells were found in the urine from the kidney, and cultures therefrom contained colon bacilli; a few streptococci were also found after the second extraction. After all of the infected teeth had been removed, six cystoscopic examinations were made. The specimens of urine from the kidneys were free from pus, and on culture a gram negative bacillus was the only organism found. Cultures made at each successive cystoscopic examination yielded fewer organisms; the last one from the urine from the right kidney, which was taken at the time of the patient's dismissal, one month after the last of the septic teeth had been removed, contained only fifteen colonies on a blood agar plate; cultures from the left kidney were negative.

During the time pus was found in the urine from the kidneys, the pelvis was lavaged with a one per cent. solution of silver nitrate, but after the disappearance of the pus following the extraction of the last teeth, only boric acid was employed. A specimen of the patient's voided urine was brought to the clinic one month after her dismissal. The findings were negative except for three pus cells to the microscopic field. Her physician said that she was free from symptoms, and had had no fever.

The experiments in this case demonstrate that infections of the urinary tract may often be the result of foci of infection harboring streptococci which have a selective affinity for the urinary tract, and that the colon bacillus which is commonly found and generally believed to be the cause, is of secondary importance. The case also illustrates a situation that is common during the eradication of foci of infection, and which is often wrongly interpreted. I refer to the extreme reaction suffered by the patient following the second extraction of teeth. I believe the reaction experienced by a patient following the removal of a chronic focus may be regarded as an indication that the offending focus has been found and should, therefore, be regarded favorably. Many, however, on finding that the patient's symptoms grow worse immediately after removal of foci, consider it as derogatory evidence in respect to this type of treatment. Stokes has called attention to the reduction in renal irritability that results from the removal of foci of infection in patients being treated for syphilis. By first removing all foci he has been able to increase, very appreciably, the amounts of mercury and arsphenamine administered.

That the formation of renal stones may be the result of bacterial action is a venerable hypothesis, and from the first evidence of the specificity of bacteria for the urinary tract, the hope of their experimental production by this means was entertained. However, although many animals were injected with bacteria from patients with nephrolithiasis under the same conditions that the animals were injected in the group of previous experiments, no positive results were obtained. It happened that, during the experiments on pyelonephritis, an attempt was made to produce an immune serum by repeated intravenous injections into a sheep of various cultures of dead bacteria obtained from patients with pyelonephritis. At necropsy the sheep's kidney was found to contain multiple calculi. To inject cultures intravenously over a long period is tedious, and a chronic focus is only partly simulated. Meisser, therefore, conceived the idea of producing a chronic focus by devitalizing a dog's tooth, and filling the root canals with bacteria obtained from the teeth and tonsils or urine of patients suffering with nephrolithiasis. After several months, röntgenograms were made, and in the renal areas of several of the dogs there were shadows, although they had not been present in previous röntgenograms. In the kidneys of many of the dogs were stones too small to produce shadows in the röntgenograms. On microscopic examination of the tissue of the medulla of these kidneys, many salt crystals and bacteria were found.

I believe the foregoing findings justify the somewhat dogmatic clinical teaching, that all patients who have a disease referable to a focus of infection shall be advised to have all such foci removed, thus removing the most formidable opposition to the general adoption of such a practice, for, as pointed out, partial removal of foci does not give partial relief of symptoms, and yet is more general than complete eradication. Also, septic teeth and tonsils are removed too often, with the assurance of benefit to the patient, after the heart has begun to beat irregularly, after albumin or pus has appeared in the urine, or after the joint has become deformed. Strange as it may seem, the idea that normal function can be restored to an irreparably damaged kidney, a deformed joint or leaking heart valve, by removing a focus that initiated the disease years before, is apparently the most common misapprehension regarding focal infection. Emphasis should be placed on the fact that the diseased tonsil or

abscessed tooth should be removed because they are diseased, and not because improvement may result to some chronic disease elsewhere in the body. When this is realized, and when all devitalized teeth and infected tonsils are immediately removed because of the disease demonstrable, then will the inestimable results of early eradication of foci of infection be achieved.

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Microgastria*

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The subject of microgastria, or congenitally small stomach, is one which has received practically no consideration in medical literature. Strümpell (1) says that "whether congenitally small stomach, giving rise to pathological changes or causing symptoms, exists, is not yet known." Kemp (2) mentions the term simply to pass it by. Numerous other writers have written of the capacity of the stomach but an exhaustive search of the literature fails to reveal a single instance in which a congenitally small stomach has been assigned as the cause of symptoms or death in the infant. We often read of cases in which abnormal smallness or absence of any vital organ is given as the cause of illness or death of the individual, and so it seems fair to assume that abnormal smallness of the stomach could readily give rise to symptoms which would cause illness, and, if not correctible by any means at our command would result in death to the individual by starvation or otherwise.

The part taken by the stomach in digestion in young infants is comparatively unimportant, aside from the coagulation of the milk by the rennin. It is doubtful if any other action takes place before the milk reaches the intestines, and indeed a large part of the milk reaches the intestines without even the coagulation having been effected. It would seem, therefore, that in the early weeks of life the function of the stomach might be considered to be that of a tube or channel for the conveyance of the food to the duodenum, where the active digestive process starts.

As the infant grows older, however, the part played by the stomach becomes much more important, as evidenced by the longer time the food remains in the stomach. It is at this time of life that we would expect symptoms to appear, in the case of abnormality in the size of the organ.

As the acidification of the gastric juice begins very soon after the ingestion of food and steadily increases until sufficient hydrochloric acid is present to give an acid reaction, the inference can be readily drawn that, in a stomach of subnormal capacity, the outflow from the glandular elements is poured out into the stomach, and finding little or no milk to act upon there results an enormous hyperacidity of the stomach. This produces symptoms which in the infant usually manifest themselves by persistent vomiting. As continued oversecretion or overactivity of any organ will eventually result in proliferation of the tissues composing it, one would expect to find in a small stomach an enormous thickening of the walls. Furthermore, because of the overactivity of the glands in the submucosa one would expect to find this coat of the stomach thickened and the gland elements much increased in size and number.

It would thus seem that in a congenitally small stomach there would be practically no symptoms for the first few months of life. However, as the infant becomes older and stomach digestion assumes its proper rôle in the economy, one would expect the child to be undernourished, because of the small amount of food it obtained for digestion. As explained above, there would then develop persistent vomiting as a result of the hyperacidity due to the large amount of acid secreted in proportion to the small amount of digestion taking place in the abnormally small stomach. This condition would inevitably cause the death of the infant from starvation as not only would the amount of food taken into the stomach be abnormally small, but even this small amount would in all probability be expelled by the persistent vomiting. The following case illustrates rather strikingly the process described:

CASE.—Baby H., female, aged thirty-six weeks, weight thirteen pounds, was admitted to the South

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Baltimore General Hospital, August 24, 1922, from the outpatient department, with a history of persistent vomiting. The family history was negative and the past history recited the facts of a normally born and breast fed infant. The history was negative for any illnesses until July 1st, when the mother brought her to the dispensary for treatment for attacks of vomiting. The physical examination was negative, with the exception of an elevation of temperature to 103° on admission. The temperature continued to run an irregular course (99° to 102°) until alkalinization of the urine with potassium citrate and forced water drinking was obtained, when it became normal. It remained normal until the fever of inanition started in the latter weeks of life.

Laboratory findings were negative, with the exception of the urine, which was strongly acid and contained albumin on chemical examination. It showed from five to seven pus cells to the field on microscopic examination. A Wassermann test was not done on the blood. Otherwise the laboratory examination was complete and included examination of the blood, cerebrospinal fluid and urine. The Wassermann test of the cerebrospinal fluid was negative.

An x ray examination was made on two occasions. The first examination was both fluoroscopic and plate. Under the fluoroscope the barium, which was introduced through a soft rubber catheter with a syringe, was seen filling out the stomach and could be forced through the pyloric opening by the operator's hand. The plate at this time was unsatisfactory as the baby vomited most of the barium between the time of fluoroscopic examination and taking the plate. The second examination, made about one week after the first, was confined to introducing barium and taking the plate immediately (Fig. 1).

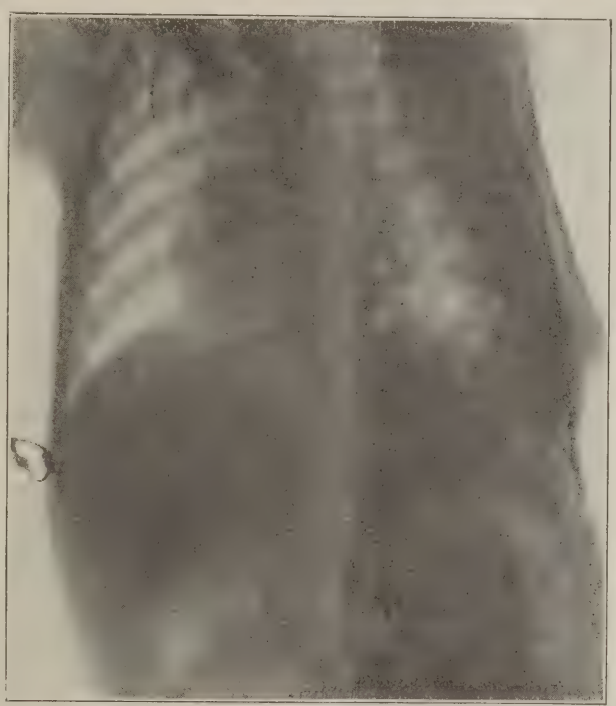

Fig. 1.—Röntgenogram taken immediately after the introduction of barium, showing congenitally small stomach.

A diagnosis of pyelitis was made on the urinary findings and temperature, the vomiting being attributed to the urinary condition. The vomiting continued, however, after the subsidence of all urinary symptoms, with short remissions, until death occurred October 18, 1922.

The character of the vomiting was not noteworthy, except that at first it was quite forcible, resembling projectile vomiting, but as the patient gradually became weaker it resembled an overflow more than an act of vomiting.

Food combinations of various mixtures were used, among them being milk, water and cane sugar; milk water and dextromaltose; protein milk; oatmeal and arrowroot gruel, etc. The heavier mixtures would be retained for a slightly longer period than the others, but usually the vomiting occurred immediately on the ingestion of food. The time of feedings and the quantities were changed several times. At one time an endeavor would be made to give large quantities of the mixtures from four to five ounces at four to five hour intervals, and when no benefit resulted shorter intervals between feedings with smaller quantities were substituted. When feeding the larger quantities the nurse reported that the baby would start vomiting in the middle of the feeding, when approximately two ounces had been ingested. Later in the illness the baby was fed with a medicine dropper at intervals of not over a half hour. The appetite at all times after the subsidence of the fever was ravenous and the baby always appeared to be hungry. The bowels were obstinately constipated throughout the entire course of the disease until the last week of life, when the movements became normal, both in character and frequency.

Deglutition seemed to be embarrassed more or less from the beginning. The baby showed an aversion to taking the nipple and would roll it around in the mouth instead of taking hold and sucking. A rather persistent stomatitis was present on admission and this, together with the fact that the baby had been breast fed and had to learn how to use the rubber nipple, was held to be the cause of the difficulty. When fed with a medicine dropper there was no difficulty in swallowing. Examination of the nose and throat was negative for any interference with the act of swallowing. Various medicaments were used, among them being tincture of belladonna by mouth and later atropine sulphate hypodermically. No response to any method of treatment was noted.

Autopsy findings were negative, with the exception of the small stomach. On removal the stomach was ligated at both ends and water was introduced through the wall with an ordinary syringe. The capacity (without pressure) was thirty c.c. Under pressure fifty c.c. could be forced into the organ, but this represented the extreme capacity. The normal capacity at this age (forty-four weeks) varies according to different authors, but can be given as approximately three hundred c.c. The abnormally small capacity of this stomach was therefore a matter of great interest.

Dr. W. G. MacCallum, professor of pathology at Johns Hopkins University, kindly consented to make sections from the stomach and I am indebted to him

for the following report on his findings. "On section the wall was found to be greatly thickened, due partly to contraction of the muscle, but also to an increased thickness of the submucosa. The mucosa itself was quite extensively altered and showed a curious condition in that many of the glands were converted into small cysts and the interglandular substance was infiltrated with cells and much scarred."

CONCLUSIONS

It can be assumed that congenital smallness of the stomach can readily be the cause of symptoms and, if sufficiently pronounced, have a fatal termination. In all cases of persistent vomiting of unknown origin and accompanied by great inanition, the possibility of congenitally small stomach should be borne in mind as a causative factor.

The röntgenological findings in the case reported were given little weight, as on account of the extreme smallness of the stomach shadow it was assumed that the technic was at fault. The autopsy, however, revealed that the operator labored better than he knew as the plate was found to be an exact replica of the organ as removed.

In all cases of persistent vomiting the stomach should be injected with barium and a careful röntgenological study made before eliminating microgastria as a cause of the condition.

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26 East Preston Street.

The Prophylaxis and Serum Therapy of Typhus Fever

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The absence of any specific treatment for typhus fever, and the high mortality in the epidemics, brought about the compelling necessity of the search for a prophylactic and curative serum. Many sera have been tried out and, although their effect was never very striking, it is possible to form some opinion of their value as a prophylactic, curative or abortive factor. The results were never uniform, in fact, very frequently they differed substantially.

As to the use of the serum and blood of typhus patients for purposes of prophylaxis, they are of no value. Many vaccines were proposed. 1, Nicolle's method—the vaccine of serum of typhus patients; 2, Hamdi's method—the vaccine of citrated blood of typhus patients heated to 60° C.; 3, Neukirch's method—the vaccine of leucocytes of the blood of typhus patients; 4, Rochazim's method—the vaccine of emulsion of typhus lice; 5, Aristovsky's method—the vaccine of a culture of Bacillus proteus X_{19}. Nicolle first employed in thirty-eight cases the serum from the blood of typhus patients on the eighth to ninth day of their illness or from animals on the second to third day of their infection. The injections were given at intervals of seven to eight days, two injections being the rule, but the results were doubtful. Out of thirty-eight patients coming from centres where typhus was prevalent, and who received prophylactic doses of serum twice, none were affected with typhus, but Nicolle is uncertain whether to ascribe their escape to the serum or possibly to the strict measures of disinfection to which they were subjected (1). Others gave three injections of mixed sterile serum of several typhus patients (pool serum), heated to 58° C., to which was added one fourth of one per cent. carbolic acid.

First, one c. c. was injected, followed in five to seven days by another injection of two c. c. and seven days later a third of three c. c. was given. Out of 129 cases thus immunized, ten persons contracted the disease, two of whom died (Barikin Rosnatovsky and Kagan). Some have given the serum in the form of citrated blood of typhus patients (eighteen c. c. blood and two c. c. of two per cent. solution of sodium citrate). I. P. Rosnatovsky and the writer employed it thrice in the same doses and order as that given above. Out of 232 patients to whom this serum was given as a prophylactic twenty-two were afflicted with typhus and two died (2). The citrated blood of a typhus patient was also used by S. I. Slatogoroff. He compiled reports of 2,914 such cases. The results were not satisfactory out of that number, 117 came down with typhus. He asserts that it is more rational to inject only once, using seven c. c. as the dose.

Ermiloff applied the same serum to 411 persons of whom thirty-four came down with this malady. Mizkevits used the serum in fifty-nine cases, in which, nevertheless, fourteen patients contracted the disease. They conducted experiments to immunize the human being against typhus by means of cultures of different proposed etiological virus of typhus (Plotz and Rabinovits microorganisms and the proteus X_{19}) also gave negative results (3).

Concerning serum therapy it is still being investigated. Although the experiments have not been extensive, it is possible to come to some conclusion concerning its value. The administration of normal horse serum is not followed by any improvement but the serum of convalescent typhus patients apparently is of some curative value.

Rubitschek obtained good results using normal horse serum. But this is disproved by Barikin, who experimented with normal horse serum, antidiphtheritic, and antistreptococcus sera in twenty-eight cases. The serum was injected from the fourth to the eighth day of the illness in doses of thirty to sixty c. c. for the course of treatment. In all these cases he did not observe any improvement which

ould be attributed to the serum; the temperature, ulse, respiration, general status and nervous symptoms were the same as among those treated without is serum; the complications were not diminished, ne duration of fever not shortened. True, among hose treated with this serum only one death is recorded, i. e., 3.5 per cent., while among those not o treated, the mortality during the same time in this ospital was 14.5 per cent., but this decreased mortality is accounted for by difference in the ages of he patients, for those using the serum were of the verage age of twenty-five, while the others averged thirty-one.

TABLE I

MORTALITY, AGE AND MORBIDITY UNDER TREATMENT BY NORMAL HORSE SERUM.

Twenty-eight Cases Treated	*Percentage of Mortality*	*Age*	*Morbidity*
y normal horse serum	3.5	25 years	No improvement.
Io serum therapy	14.5	31 "	"

Other experimenters used the serum of convalesent typhus patients (three to twelve days after the all of the temperature). About this serum there re also different contrasting statistics. Legrain, 'enaud, Slatogoroff and Ivashinzeff observed from mploying the serum a considerable improvement, ometimes even an aborting of the disease. Marinovsky used the serum of convalescents between he sixth and ninth days after the fall of the temerature, allowed it to precipitate and then mixed ith it an even amount of normal saline solution. his he heated for half an hour in a water bath t a temperature of 56° to 58° C. This serum was aken from several patients, mixed together, and mployed only in the most severe cases of typhus n the first day of the illness. Usually, he injected wenty c. c. of this solution hypodermically; in the ext one or two days he repeated the injection. He eported thirty-eight cases where he observed some nprovement, and of those thirty-eight patients seven ied. Such a high percentage of mortality is due o the bad condition of the patients. This serum as little influence upon the temperature. In cases f meningitis he saw improvement; headache, inomnia, and delirium disappeared, convulsion topped, the contractures became weaker. In rare ases with a marked myocarditis and intermittent ulse, after the injection of serum the pulse beame regular. In one case of severe perichondritis ith a complete aphonia, after each injection the oice appeared again. He asserts that this serum has certain curative value (4). But this fact is not onfirmed by other authorities. Kolpitin used the ame serum in doses of from three to five c. c. for hildren, and did not notice any effect (5). Barikin ompiled reports of fourteen typhus fever cases in hich sometimes a temporary fall of the temperature 1° to 1.5° C.) was caused by the injection of the erum of convalescents; but this effect followed lso the injection of normal horse serum which has o curative value. According to Barikin's records he average duration of fever among those treated y this serum was 14.2 days, their average age was wenty-four years, and there was no death, but in ther respects there was no improvement.

TABLE II.

MORTALITY, AGE, DURATION OF FEVER AND MORBIDITY UNDER TREATMENT BY SERUM OF CONVALESCENTS.

Fourteen Cases Treated	*Percentage of Mortality*	*Age*	*Duration of Fever*	*Morbidity*
With serum of convalescents	0	24 years	14.2 days	No improvement.
No serum therapy	14.5	31 years	15 days	"

Barikin suggests that this serum of convalescents cannot claim to be a specific remedy for typhus; the absence of deaths he attributed to the youth of those patients (6). Doubtful results about the value of this serum were observed also by Nicolle, Conseil, Neukirch and Zlocisty. Finally, Boldiroff and Kastanian (Rostov) deny the value of this serum altogether.

Concerning the serum of a horse immunized against typhus fever, there were reported beneficial results by Nicolle, Potel, Poirson, Pazevitz, Tridoin and Barikin. Pazevitz used for immunization of the horse the blood of typhus patients of human beings. But Nicolle immunized the horses by means of a guineapig infected with typhus; Barikin also recommended the use of serum of the guineapig, because the blood of the human being gives cystolysis and hemolysis serum for the tissue, blood and organs of other persons. He immunized two horses as follows: The blood of the guineapig infected with typhus was taken the first day of the fever; from this blood was taken a specimen for culture to be sure that this blood was sterile; then the organ was pressed, mixed with 0.8 gm. of sodium chloride to each 100 c. c., filtered through gauze for the purpose of making it free from coarse pieces and immediately was employed for immunization. The injections of the antigen were made intramuscularly in ascending doses from one c. c. to one hundred c. c. At each injection the horse responded by fever. The injections lasted seven months, then twelve days after the fall of the temperature of the horse, its blood was taken and serum prepared; the serum was heated to 45° C. two days in succession for half an hour each day, to it added one half of one per cent. chloroform and divided in ampoules of ten c. c. each. Barikin observed thirty cases treated by this serum in the medical clinic of Don University.

Injections were made hypodermically, beginning on the fourth to the eighth day of the illness in doses of ten to sixty c. c. at once. The results: the status praesens often became better, the nervous symptoms weaker, pulse and respiration, apparently better, temperature fell by crisis or lysis, but the disease was not aborted; the average duration of the fever was 14.6 days, while among those not treated with the serum the duration was 16.8 days. Out of thirty patients treated with this serum two died, one in the fastigium of the disease; the second was forty-eight years of age with marked general tuberculosis; this case cannot be counted. Hence, the percentage of mortality among them is 3.3 per cent., while among those treated without the serum the mortality in the same hospital and same time was as high as 12.5 per cent. Moreover, the outlook of the latter was better than for the first group; the average of the second group was twenty-four years, of the first, twenty-eight and a half.

TABLE III.

MORTALITY, DURATION OF FEVER, AGE AND MORBIDITY UNDER TREATMENT WITH SERUM IMMUNIZED HORSES.

Thirty Cases Treated	*Percentage of Mortality*	*Duration of Fever*	*Age*	*Morbidity*
With serum of immunized horses	3.3	14.6 days	28.5 years	Improvement.
No serum therapy	12.5	16.8 days	24 years	"

CONCLUSION

The use of different serums for purposes of prophylaxis has no justification in theory nor has been proved of value in practice. Betore the virus is definitely found and isolated, appropriate sera for prophylaxis must of necessity be difficult. But therapeutically, however, typhus serum, especially the serum of immunized horses, is of distinct service, since its employment in addition to other established treatment has materially lessened the morbidity as well the mortality of typhus fever.

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562 WARREN STREET.

Anorectal Operations Under Local Anesthesia*

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In 1920, Dr. Louis J. Hirschman, of Detroit, read a paper on the standardization of operations for internal hemorrhoids, in which he stated that: "In our own specialty it seems that the time has arrived for our consideration of the standardization of certain operative procedures directed to the relief of some of the more common proctological affections." It seems to me that not enough serious thought or consideration has been given to Dr. Hirschman's plea, and it is the object of this paper to renew this plea for standardization and to elicit further discussion with especial reference to operations under local anesthesia. The entire medical profession looks up to the American Proctological Society, and in its annual transactions expects to find the last word in things proctological. By neglecting to place ourselves on record as accepting certain operative procedures and condemning others, we fail in our endeavor to hold that authoritative position in proctology that we should hold in the medical body.

Local anesthesia in rectal operations has been developed and perfected to a stage where we can safely say that in the hands of the Fellows of the American Proctological Society, from sixty to ninety-five per cent. of all anorectal conditions requiring operation can be performed without the use of a general anesthetic. Some of us are more partial to its use than others. For the past thirty years, the profession has been interested in local anesthesia; various strengths of numerous solutions have been used, ranging from six per cent. cocaine or betaeucaine solution down to one eighth or one tenth per cent. with relatively good results. Even sterile water has been used with some success.

A local anesthetic to be valuable must not of itself be a cause of pain, either before its action is established or after its action has ceased. None of the drugs are used pure, but all should be dissolved in fluids isotonic with the juices that bathe the body cells, such as a 0.9 per cent. solution of common salt.

Cocaine has its disadvantages even when used in one tenth per cent. strength, in the rectum, and is followed by severe excruciating pain almost immediately after operation, and also toxic symptoms. Betaëucaine has almost the same action as cocaine, and produces the same symptoms as a protoplasmic poison, but when used in larger doses it is less powerful as a local anesthetic, does not diffuse as well, and is more irritating, but can be sterilized by boiling. Stovaine is too irritating for infiltration about the anus, but may be used for spinal anesthesia.

Alypin is soluble in watery solutions, is less active, but more irritating than cocaine and produces the same toxic symptoms. Novocaine is feebly poisonous, and up to a ten per cent. solution is nonirritating, may be sterilized and resterilized without any marked effect upon its anesthetic properties. Quinine and urea hydrochloride, the use of which I have described in the NEW YORK MEDICAL JOURNAL, in 1916, 1917, 1918, and 1919, I have discarded, on account of the almost immediate production of fibrin into the injected tissues, somewhat distorting the geography of the operative field, the frequent delay in healing, and sloughing of the tissues which sometimes takes place due to the delayed absorption of the fibrin. Its principal quality of value is that the anesthesia will last three to ten days.

The physiological action of all the drugs mentioned above, with the exception of novocaine and cocaine, is incompatible with adrenalin. The only drug relatively nonirritating, nontoxic, at the time of use and after operation, soluble in water, capable of being sterilized with heat, and nonantagonistic to adrenalin, is novocaine.

In 1917, an article of mine (1) was published on

*Presented at the annual meeting of the American Proctological Society, held in Los Angeles, Cal., June, 1923.

Quinine Urea Hydrochloride, the Ideal Local Anesthetic, where in a series of over two thousand cases, I had successfully operated, using quinine and urea for local anesthesia, and advised its use as representing seventy to seventy-five per cent. of all cases requiring surgical treatment.

About a year ago, Dr. Zobel, of San Francisco, while on a visit to New York, demonstrated to me the use of novocaine with adrenalin, and for the past year I have limited myself to the use of novocaine, and have found it to be the most practical, and for rectal operations should be the anesthetic of choice, on account of its slight toxicity, its permitting the use of larger doses without danger, and the carrying out of a complete operation performed with difficulty or not at all with cocaine. It has marked anesthetic power and is neither irritating nor has it any dilating effects upon the bloodvessels. The disadvantage of novocaine is its short duration as a local anesthetic, lasting only about twenty minutes, but the addition of three minims of adrenalin to the ounce causes the anesthesia to become more pronounced and of longer duration without adding to the toxicity of the drug.

The nerves supplying the anus and rectum are: The pudic nerves supplying parts of the anus; the pelvic branches of the posterior cutaneous femoris, which pass through the inguinal canal and supply the anal region and perineum, and the nerves originating from the coccygeal plexus supply the anal region. The sympathetic ganglion has no part in the sensory innervation. Bilateral blocking of the trunk of the pudic nerve will not be sufficient to produce anesthesia of the anus, nor will the filling of the ischiorectal fossæ with one half per cent. novocaine solution be sufficient, although this will cause blocking of the branches of the pudic and posterior cutaneous femoris nerves supplying the anus.

Sacral and spinal anesthesia, I shall not touch upon. I do not use these forms of anesthesia, but in the hands of competent men, they produce excellent relaxation of the sphincter muscle, and anesthesia of the anal region.

The mucosa of the stomach and intestinal tract, we all know are insensitive. Even in the most sensitive persons, absence of sensation begins in the esophagus and extends to the rectum, painful sensation again appearing in this part and becoming more pronounced in the anal portion at the mucocutaneous junction, where the rectum ends and the anus begins. Absolute lack of sensation of the mucous membrane of the colon may be demonstrated in any artificial anus, as in a colostomy or ileostomy, or a sigmoid when fixed to the anal or sacral region.

For the production of local anesthesia in rectal operations, four points of entrance about the anal region originally were used, two or three finger breadths distant from the anal orifice; the solution was injected perpendicularly, at the lateral points, parallel to the wall of the rectum into the sphincter and levator ani muscles, then into the subcutaneous tissues using about five to six ounces of solution. For many years the direct method of infiltration of various solutions into the tissues to be operated upon or to be removed was practised.

During the past year, following the method used by Dr. Zobel (although he does not lay claim to originality), I have found in a series of over five hundred cases that the best and most reliable method of producing local anesthesia for operations upon the anus and rectum lies in circuminjecting the anus. For this purpose I employ an isotonic solution of one half per cent. novocaine, with the addition of three minims of adrenalin (1-1000) to the ounce. Greater concentration is not necessary. Beginning at a point about one half inch posterior to the anal margin, with the aid of a fine needle about two or two and one half inches long provided with a sharp point for easy entrance, inject under the skin about the anus, first to the right and then to the left without removing the needle, so that the tissues circumscribing the anus receive the benefit of about four to six drams and very seldom more than one ounce of the solution. After massaging the injected parts for one or two minutes, to allow for the proper dissemination and absorption of the anesthetic fluid, a most complete relaxation of the sphincter muscles is obtained, even in the presence of an acutely painful ulcer or fissure, or a greatly hypertrophied muscle. The anus becomes patulous, completely relaxed, and brings into view any and all rectal disease that may be discovered when the patient is under the influence of a general anesthetic. There is absolutely no need for stretching the sphincter or dilating the anus, which frequently means the tearing of some of the muscular fibres of the sphincter. A fine needle should be used and the solution should be injected slowly. The needle should not be permitted to reach or perforate the lumen of a fistulous tract, ulcer, or other lesion, or puncture the skin or mucous membrane. This would permit the escape of the injected fluid and would interfere with the success of the operation as far as the anesthesia is concerned. Absence of pressure in any form of infiltration anesthesia prevents thorough anesthesia, and is a basic principle in local anesthesia.

Patients can be operated upon, under local anesthesia, at home, in the clinic, at the office, or in the hospital. They do not require excessive preoperative preparation; they are not restricted as far as food or drink is concerned, but are warned against taking cathartics or enemata immediately before operation. When the patient is sent to the hospital he is usually sent in at 7 a.m. after having had his breakfast, and is operated upon at 8 or 9 a. m.; his regular meals are not interfered with, he is not tortured with the insertion of any rubber tubes or whistle, nor is it necessary to tie up his bowels with bismuth and opium or any other opiate for five to seven days. Instead of this, these patients have their dressings changed the day after operation, when they receive an oil enema and are encouraged to move their bowels the same day, and usually leave the hospital at the end of three days.

During the past year, in a series of over five hundred cases, I have used the circumscribed injection method of local anesthesia with the aid of novocaine one half per cent. and adrenalin (1-1000) three minims to the ounce. This represented about ninety-five per cent. of all cases requiring operative treatment that came under my observation. I use a general anesthetic only in those cases where extensive operations are to be done, such as excisions or resections, or where sutures are to be employed; where

I do not know in advance exactly what is to be done before operating, where there are any complications or conditions that would prevent thorough or complete work; or in the presence of pus, where the infection may be spread when injecting the solution for the production of local anesthesia.

The following conditions can be successfully operated upon under the influence of local anesthesia: complete, radical removal of external, internal and thrombotic hemorrhoids; fissure ani, ulcers, hypertrophied papillæ; diseased crypts of Morgagni; some forms of fistulæ; some forms of prolapsus ani; polypi; impaction of feces and removal of foreign bodies; dermoid cysts, and the modified Ball's operation for pruritis ani. Dr. Hirschman (2) says he is convinced that there is no case of hemorrhoids so severe that it cannot be successfully operated upon under local anesthesia, and he recommends as the standard anesthetic, one of the proved local anesthetics now so commonly used.

The object of this paper is merely to relate my experiences with what to me appears to be the safest and most reliable method of employing local anesthesia in rectal operations, and to elicit a sufficient amount of discussion so that we may be able to start some constructive work in proctology. Perhaps, besides reading papers and attending clinics at our meetings, we may reach a point where we can definitely agree among ourselves and then let the medical profession at large know that the American Proctological Society has accepted this, that, or the other method as the standard method of operating upon this, that, or the other condition, or that we have accepted a certain method of local anesthesia, or a certain local anesthetic as the anesthetic of choice in certain rectal operations.

CONCLUSIONS

1. Up to the present novocaine one half per cent. with adrenalin three minims to the ounce is the safest and most satisfactory solution for the production of local anesthesia in anorectal operations.
2. The circumscribed injection of the anal tissues blocks the sensation areas most satisfactorily for complete anesthesia, and a thorough relaxation of the sphincter muscles.
3. Stretching of the sphincter or dilating the anus becomes unnecessary.
4. The method of anesthesia described above can be successfully employed in about ninety to ninety-five per cent. of all anorectal disorders requiring operation.

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345 WEST EIGHTY-EIGHTH STREET.

Seborrheic Diathesis*

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It is a trite but ever true medical observation that a spectacular and rare disease attracts a good deal more attention than one that is common and prevalent, though the collective total of pathological significance of the latter may far exceed that of its sensational but rare rival.

Seborrhea is just one of those common, everyday clinical conditions that are so prevalent as to be ignored by the general profession.

DEFINITION

The general consideration of seborrhea can be properly preceded by a definition. What is seborrhea? The common conception is that seborrhea means greasy or oily skin. This conception is correct so far as it expresses the most familiar and elementary clinical features of it, but clinical manifestations of seborrhea are too varied and numerous to be reduced to this simple conception. The important feature of seborrhea which is commonly overlooked is its tendency to attack the same individual at different ages—in fact, in some cases pursuing an individual from the cradle to old age, assuming different clinical types according to biological characteristics of that age. In other words, seborrhea, as a clinical synthetic unit, is not simply a local dermatosis subject to control by various systemic factors, but a congenital or hereditary tendency to present certain clinical skin manifestations under the influence of certain dietetic and metabolic factors. This tendency is best expressed by the term seborrheic diathesis.

THE SEBORRHEIC INFANT

The seborrheic person is born with a milk crust on his scalp, which is the first evidence of the seborrheic diathesis. Commonly, it is considered as an unduly delayed remnant of vernix caseosa, but its persistency betrays its constitutional origin. Shortly the seborrheic baby begins to gain weight and to deposit fat. His scalp and face present eczematous areas. These eczematous areas differ from the ordinary type of infantile eczema by the greasy yellow crusts, easily detached, and by a tendency to spread from the scalp down, on the face, neck and trunk. This feature constitutes the most striking characteristic of seborrheic eczema, and this alone is sufficient for a correct differential diagnosis. The seborrheic element in infantile eczema was recognized by pediatrists only in a general way, largely from a dietetic point of view. The etiological factor of excessive fats and carbohydrates in infantile

*Read before the Los Angeles County Medical Association, March 1, 1923.

eczema was well established, and dietetic corrections in this direction were used as a routine. What pediatrists, with very few exceptions, did not recognize, is the clinical and morphological difference in types of eczemas due to the excess of fats and starches, and those due to proteid anaphylaxis. Through lack of this recognition, they lose diagnostic indications and the therapeutic advantage of local antiparasitic applications to which seborrhea is peculiarly responsive.

What percentage of infantile and children's eczema is of seborrheic origin can not be answered even approximately, as no statistical data on this point are available. In fact, a definite answer can be hardly given, as there are several mixed forms in which seborrhea is secondarily engrafted on anaphylactic eczema.

SEBORRHEA IN THE ADOLESCENT

After getting over his eczema of infancy and childhood, a seborrheic individual may stay clean until the next deep biological upheaval in his body—the approaching of puberty. The awakening of sex power lays heavy claims on the organ which is the weak spot in a seborrheic—the skin and particularly the pilosebaceous glands. As a reaction to this excessive demand on the skin acne of the face and seborrhea of the scalp develops in the seborrheic.

ACNE VULGARIS

Acne vulgaris, as is well expressed by its name, is so common as to be looked upon by many laymen as a physiological phenomena. Many practitioners consider it below their dignity to treat cases of acne. Yet many acne patients suffer not only from vanity but are actually handicapped in occupational and social pursuits. Anyone who has seen severe and neglected cases of acne, particularly of the indurated and cystic type, will agree that a case of severe acne is a serious affliction worthy of the best clinical skill and judgment. Deep multiple scars of misreated acne are a permanent disfigurement which can be easily avoided through timely and proper care. The duration of acne varies from two to five years. In a majority of cases it improves as the patient gets older and the stress of awakening puberty subsides.

SEBORRHEA OF THE SCALP

In many cases, simultaneously with acne, or sometimes with the subsidence of it, seborrhea of the scalp develops in one of the three stages. In the beginning seborrhea of the scalp presents merely dry dandruff—socalled pityriasis simplex. In this stage the hair is not affected. If unchecked this stage merges into the next stage—pityriasis steatoides, when dandruff scales become greasy and heavy. Still farther the process passes into the third stage—seborrhea oleosa—when the scalp becomes diffusedly oily.

The last two stages usually affect the nutrition of the hair and slowly but surely lead to permanent alopecia. Seborrhea of the scalp is easily the greatest single cause of baldness of the human race.

Women suffer a good deal less from seborrhea alopecia, partly because longer hair hides the cosmetic results better and partly because the female scalp apparently possesses a greater resistance to fat deposits in the hair follicles.

SEBORRHEIC DERMATITIS

Seborrhea being pathologically a low grade inflammation, it is easy to see how on the slightest provocation it can be stirred up into an active inflammatory state and turn into seborrheic dermatitis or eczema. Seborrheic dermatitis is quite a common condition. Characteristically it creeps down from the scalp below the hair line and may attack far distant parts of the body. Most common locations are: the face, behind and in front of the ears, sternum, intrascapular regions and genitals. Seborrheic eczema is more superficial and shows more sharply defined borders than ordinary eczema. Often patches of seborrheic dermatitis show circinate and festooned edges. At the same time it shows a remarkable tendency to recurrence. Due to low resistance the seborrheic skin is susceptible to secondary infection by staphylococci and streptococci, and seborrheic patches often present impetiginous appearance.

SECONDARY SEBORRHEA

It is important to remember that seborrheic contagium is mobile and easily spreads on already diseased areas. Because of it seborrhea is often seen on psoriatic patches. In fact, the association of seborrhea and psoriasis is so constant as to suggest some pathogenic relationship between the two. Seborrhea is also commonly seen engrafted on syphilitic lesions which accounts for the yellowish greasy appearance of many late secondary syphilides.

ROSACEA

As the seborrheic person passes over the age of acne and approaches the fourth decade he or she has a tendency to develop another chronic dermatosis, namely rosacea, commonly called acne rosacea, as in most cases it is associated with acne throughout; in other cases seborrhea develops at a later stage. Rosacea is characterized by permanent venous dilatations and acneiform eruptions localized in the socalled flush area of the face. Rosacea is the first evidence of retrograde changes of the normal tonus and vitality of the skin, the first beginning of the senility of the skin.

Rosacea is usually progressive and incurable, though it can be held in abeyance for many years under rational care. People with florid complexions —the lay term for seborrhea, are the habitual victims of rosacea.

Rosacea is controlled by the same systemic and dietetic factors and yields to the same therapeutic measures as acne and seborrhea.

SEBORRHEIC KERATOSES

The next and the last link in the biological cycle of a seborrheic are seborrheic warts, also known under the name of senile keratoses. Seborrheic keratoses develop from middle age up, in typical seborrheic locations, such as the face, scalp, neck, chest or back, as greasy, grayish yellow, brown or slate colored, slightly elevated scaly lesions. The great clinical importance of seborrheic warts is that they have often a tendency to turn into keratoses and still later into epitheliomata and can be

regarded as a true type of precancerous lesions. While it is true that only a small percentage of seborrheic keratoses degenerate into epitheliomata, their number is so infinitely large that in all conservatism many thousands of epitheliomata can be credited to this source. Yet not only laymen but even the profession at large pays very little attention to this type of precancerous lesions.

One of the best illustrations how seborrhea prepares ground for epitheliomatous degeneration was pointed out by D. W. Montgomery (1), of San Francisco, in the frequent association of the dry seborrheic lesions of the lip with subsequent development of epitheliomata.

CLASSIFICATION OF SEBORRHEIC MANIFESTATIONS

To recapitulate briefly, seborrhea starts in infancy as milk crust and continues as infantile seborrheic eczema; in adolescence it breaks out as acne vulgaris and diffuse seborrhea. Seborrhea of the scalp leads in many cases to permanent alopecia and brings out many attacks of seborrheic dermatitis. Later in life it brings out acne rosacea and still later produces seborrheic or senile keratoses which lead to epitheliomata. It is a matter of wonder and regret that various clinical forms of seborrhea cited above are still looked upon by many dermatologists as separate clinical entities and not as clinical variations of the same pathological unit. Classification offered by many writers is too chaotic and confusing to be considered here. The best and the most comprehensive conception of seborrhea has been offered so far by the French dermatologist, Darier (2), to be considered later.

DIAGNOSIS.

Clinical recognition of seborrheic skin manifestations presents no difficulties. Seborrheic skin is recognized by dirty yellow, brownish or grayish tint, greasiness or oily feel, dilated pilosebaceous openings and comedones; the inflammatory types by yellow heavy greasy scales, well defined borders, often circinate, superficial character of the patches, tendency to spread downward from the scalp beyond the hair line and centripetal localization. Most often seborrhea has to be differentiated from eczema, ringworm, syphilis, psoriasis and pityriasis rosea.

ETIOLOGY AND PATHOGENESIS.

Parasitic theory.—The etiology of seborrhea is still a matter of controversy and confusion. The prevailing theory is parasitic. Seborrhea is held to be infectious because certain microorganisms are constantly found in seborrhea. These are: Bacillus seborrheicus of Sabouraud, spores of Malassez, bottle bacillus of Unna and polymorphous coccus with gray colonies described by Sabouraud which is apparently identical with morococcus of Unna.

However, the specificity of the bacteria is not proved as they have been found by Schamberg also in nonseborrheic skin. Apparently these bacteria become pathogenic only under certain circumstances found in seborrhea. In other words there is more reason to say that the alleged microorganisms are responsible rather for complications of seborrhea such as seborrheic dermatitis, than for seborrhea itself.

Endocrinous theory.—Lately with the new ideas of the modern research, a new interpretation was advanced—endocrinous. The fact that acne and seborrhea start at the time of the greatest physiological activity of endocrinous glands, essentially gonads, and also the fact that acne is often caused in females by dysmenorrhea, gave rise to the endocrinous origin of seborrhea. The endocrinous theory, however, does not account for all clinical forms of seborrhea, as some of them, such as acne rosacea and seborrheic keratoses, arise and continue at the physiological epochs showing not only the lack of increase of endocrinous activity, but more so, the actual decrease of it. Endocrines can be accepted as a contributing factor at certain physiological epochs toward precipitating the development of seborrheic manifestations but not as a basic etiological factor of seborrheic diathesis.

Metabolic theory.—In spite of constant findings of certain microorganisms in seborrheic lesions, and in spite of the ready response of seborrheic lesions to antiparasitic applications attested by all observers, clinical experience points strongly to the great pathogenic importance of systemic etiological factors in seborrhea. It is a well established empirical observation, often quoted by the patients themselves, that an excess of starches, fats and sweets in diet brings on an acne outbreak. Aggravation of acne by constipation and digestive disorders is also well known clinically.

The latest research in metabolism is supplying more and more evidence that seborrhea is essentially a metabolic disorder. Thus Levin and Kahn (3) in their biochemical studies of skin diseases have found hyperglycemia in over fifty per cent. of acne cases. This observation has been confirmed by Highman and Schwartz (4). Levin and Kahn have also found mild acidosis in about thirty per cent. of their series of twenty-three cases of acne. Acidosis in seborrhea has been found still earlier by English observers, Barber and Semon. These observers have found that vigorous administration of alkalies has controlled seborrheic lesions. D. W. Montgomery (5) of San Francisco, one of the best American students of seborrhea, is the authority for the statement that many patients with seborrheic eczema have enlargement of the liver, possibly due to fatty infiltration or the excess of stored glycogen. On the other hand, it is an old clinical observation that in anemia and various wasting diseases, such as tuberculosis, seborrhea and acne are produced through a defective oxidation, so called acne cachecticorum.

Infantile seborrhea as pointed out by Montgomery is due to a rapid absorption and deposit of milk fat in the skin. Skin, as Montgomery puts it well is the largest fat using organ in the body and can be looked upon as an immense fat excreting gland. In the light of all these data, seborrhea should be regarded as a metabolic disorder particularly of fat but it may be caused also by a faulty assimilation of carbohydrates and sugars.

SEBORRHEIC DIATHESIS

The fact that clinical manifestations of seborrhea present such a multiformity of lesions as to elude at the hands of many writers the recognition of

common origin and still more the fact that these clinical types of seborrhea occur at definite biological epochs and have a tendency to attack the same individual at these periods seems to me points strongly to the deep nature of metabolic derangement conducive to seborrhea. It seems to me that an assumption of seborrheic diathesis will explain many clinical problems pertaining to seborrhea.

The idea of seborrheic diathesis has been definitely formulated and promulgated by English writers, Barber and Semon (6), in 1919. However, the clinical conception of it has been closely approached and given under different names by two earlier writers.

EXUDATIVE DIATHESIS.

The first is exudative diathesis promulgated by Czerny in 1909 and generally accepted by pediatrists. Exudative diathesis signifies a congenital or hereditary metabolic fat derangement characterized by a strong tendency to eruptive lesions on the skin and mucous membranes. The skin manifestations, as they are described by Czerny, begin as a persistent milk crust and gradually develop into eczema, spreading from the scalp down on the face and neck, commonly involving intraauricular folds and leading to intertriginous lesions in body folds. This description so well fits in a seborrheic syndrome and well shows that seborrhea constitutes a very important if not the main feature of exudative diathesis. It is but natural that Czerny, being a pediatrist and not a dermatologist, has not given much attention to morphological features but laid main stress on the systemic factors.

KEROSIS.

The second and still broader, in fact the most comprehensive and thorough conception of seborrheic diathesis so far advanced, has been created by the French dermatologist Darier, who suggested a synthetic term—kerosis—to comprise all clinical manifestations and clinical types of seborrhea. It is most singular that Darier having incorporated every clinical type of seborrhea and having given a perfect description of each has found it necessary to coin a new name, kerosis—insisting that seborrhea is merely a complication and only one of the features suggested by him, kerotic diathesis. Yet he emphasizes as the most significant feature of his kerosis its tendency to attack individuals at different biological epochs and in describing it simply enumerates all the seborrheic types cited above. Darier's conception of kerosis has been, apparently, interpreted also by others, as seborrheic diathesis. Thus Barber and Semon in formulating their hypothesis of seborrheic diathesis have based it entirely on Darier's conception of kerosis.

SEBORRHEA AS DIATHESIS.

To me seborrhea as a clinical phenomenon has every earmark and characteristic of a metabolic dyscrasia or diathesis. It starts from birth and may pursue a person to old age. Different clinical types of seborrheic diathesis occur only at certain definite biological epochs showing a deep metabolic and biochemic basis of its origin. Seborrhea is definitely connected with fat metabolism and is controlled by dietetic factors. Various manifestations of seborrhea may present a striking difference of clinical pictures, yet they all can be reduced to the same etiological factors and present the same pathological substrate deposition of fat in the skin. As any other diathesis, seborrhea can vary in degree and intensity. It can be mitigated and controlled by biological environment of an individual and by therapeutic measures. It may be apparent at early infancy or it may break out at a later period. It may be in a latent or dormant stage for many years, and then suddenly, under physiological upheaval or pathological associated factors break out in acute and severe form. It may strike one individual in the family or may be hereditary and affect several members of the family.

The bacteriological findings and the clinical response of seborrheic lesions to antiparasitic applications do not invalidate to any extent the metabolic hypothesis of seborrhea. If we remember that the surface of the skin is normally infested with very luxurious and multiform bacterial flora it is readily seen how with the disturbed nutrition and the lowered resistance of the skin microorganisms become pathogenic, increase in virulence and lead to active seborrhoid lesions or mixed infections with staphylococci and streptococci.

CLINICAL SIGNIFICANCE OF SEBORRHEA.

The clinical scope of seborrhea can be readily understood from numerous clinical manifestations described above, particularly if it is remembered that each one of these clinical forms belongs to the most commonly met with dermatoses. Taking collectively all clinical variations of seborrhea, it easily leads all other dermatoses in numbers. Its victims are innumerable but the damage caused by it is not realized because of its chronicity and insidious mode of development.

The ravages of seborrhoic diathesis are not only limited to many thousands of infantile eczemas and later in adolescence to millions of sufferers from acne and seborrhea of the scalp leading to permanent alopecia. Recurrent attacks of seborrheic dermatitis with secondary staphylococcic and streptococcic infection present a most distressing and stubborn condition. Still later seborrheics are susceptible to another permanently disfiguring condition of acne rosacea leading to telangiectases and occasionally to rhinophymatous tumors.

The most serious damage and yet the least realized by the general profession is the tendency of seborrheic lesions to degenerate into precancerous lesions. As emphasized above, seborrheic, i. e., senile keratoses are the most frequent cause of skin cancer. The frequency of skin cancer, unrecognized and untreated, metastasizing in the lymphatics has not been and can never be definitely established. For this reason the preventive importance of destruction of seborrheic precancerous lesions is self evident. Besides the enormous clinical interest seborrhea deserves attention at the hands of the general profession from a purely theoretical scientific point of view. The steadily accumulating evidence of systemic changes cited above, found in seborrhea, such as hyperglycemia, acidity, enlargement of the liver, etc., should interest and stimulate the internist and the student of metabolism to study

seborrhea as the skin manifestation of deep metabolic disorders.

SUMMARY

1. Seborrhea presents a large number of clinical types related etiologically and pathologically, but differing widely in morphologic features.

2. Seborrhea has a tendency to attack the patient at different physiological epochs in a definite morphological sequence.

3. Seborrhea is a metabolic diathesis, congenital or hereditary, and the bacterial invasion is a secondary development.

4. Seborrheic lesions are controlled the best by an appropriate general régime, dietetic corrections combined with local antiparasitic applications.

5. The seborrheic patient should be watched at different epochs of life for a possible development of seborrhoids corresponding to his age.

6. Seborrheic manifestations should more often be considered by the internist as surface indications of metabolic derangements. Such study may not only increase the efficiency of dermatological treatment but also may clear up the pathogenesis of many obscure visceral lesions due to faulty fat or carbohydrate metabolism.

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Prolapse of the Ventricle of Morgagni

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(*Concluded from page 300*)

DEFINITION

By the term of prolapsus of Morgagni's ventricle is meant a more or less voluminous tumor of the larynx, red in color and smooth in surface, appearing to make its exit from the ventricle. The tumor has a broad base of implantation, distinctly separated from the ventricular band, overlying the corresponding vocal cord covering it more or less completely.

Case I.—Male, aged thirty-nine years, always enjoyed good health; no tuberculosis, no syphilis. He was seized by hoarseness which lasted only five or six days. A year later, following severe sneezing, he experienced severe pain deep down on the left side of the throat. The following day he was hoarse and this hoarseness continued to increase. When we saw the patient a few weeks later the entire larynx was red and between the left vocal cord and ventricular band was a dark red mass almost covering the entire cord. The cords did not come together. The right side of the larynx was perfectly normal. An appropriate treatment was prescribed, but the laryngoscopic picture viewed upon several occasions did not change, although symptomatically there was improvement. He consulted another physician who diagnosed tuberculosis of the larynx and gave a bad prognosis.

Eleven months later the patient again entered the clinic and an attempt was made to reduce the congestion with a solution of adrenaline. The mucosa became pale for a few hours but the hoarseness was not relieved. It was then decided to remove the mass with cutting forceps which was accomplished in two séances, after which the voice became almost normal, but the hoarseness recurred in about two months. It was then found that an almost identical lesion was present on the right side, but the former prolapse of the left ventricle had been cured. The right sided prolapse was in turn removed with ease. The voice was at once restored to normal in five or six days. The patient was seen five months later. The larynx was normal, likewise the voice.

The bits of tissue removed were examined by Prof. Sabrazès. They were covered with stratified pavement epithelium consisting of six to eight layers. The chorion was transformed into an infiltrate of embryonal mononuclear and polynuclear embryonal cells having no tendency to form islands, and were densely scattered throughout the preparation. The same type of cell was found in the interstices of the epithelial lining. There were few vessels; the capillaries and venules met with presented inflammatory lesions of the internal tunic—swelling and multiplication of the endothelium. At no spot were giant cells detected, nor were there any foci of necrosis.

Diagnosis: Débris of the mucosa of Morgagni's ventricle, presenting thickening and inflammation.

PATHOLOGY

From what is known of the reported cases one may assume that the ventricle becomes turned inside out like a glove finger and projects through the ventricular orifice. Fränkel has rightly remarked that the motives favoring this interpretation are, from the viewpoint of anatomy, the possibility of reducing the mucosa, and clinically the sudden appearance of the tumor.

To be sure, the sudden appearance of the tumor is noted in many cases, but in quite a number of other reports no such mention is made and in analyzing the histories of a number of patients it will be found that hoarseness had been present for a number of days. Therefore, this symptom is not necessary for the diagnosis of prolapsus of Morgagni's ventricle and when encountered permits of another explanation.

The only proof that a turning inside out occurs

would be an immediate demonstration, but this is an impossibility. For this it would be sufficient to consider the appendix and first of all the way in which it separates itself at a right angle from the ventricular cavity, a sort of spur directed backwards and outwardly, thus constituting a means of fixation of the ventricle. Its sinuosities and accessory cavities are all so many fulcrums solidly built into the surrounding connective tissue which is so abundantly supplied with glands and which becomes mingled with the perichondrium so gradually that it is often impossible to detect where one begins and the other ends. Consequently the appendix is solidly united to the epiglottis and thyroid cartilage in front, to the arytenoid cartilages behind, so that it seems to us an impossibility for it to break away from its attachments and to prolapse outwardly.

On the other hand, without the appendix, only the posterior third of the ventricular cavity could become everted, but as long as the appendix enters into the cavity of the ventricle, that is to say, into the two anterior thirds of the latter, eversion cannot take place without drawing the appendix along with it. Therefore, anatomically it is quite logical to doubt the possibility of a total prolapse of the mucosa of Morgagni's ventricle, as many observers are inclined to admit.

If on account of these anatomical relations and its histological structure prolapse of the ventricle is impossible, to what cause can one attribute the more or less large tumor visible in the larynx?

Fortunately there have been some examinations of the larynx postmortem and these have shown clearly that what had been supposed to be a prolapse of the ventricle was quite another affair, because the ventricular cavity was preserved; it is only decreased in size by a more or less voluminous swelling springing from one of the walls of the ventricular cavity and projecting between the ventricular band and the vocal cord.

Here, for example, is Fränkel's description of a postmortem examination made by him. "On each side, the entire ventricular opening was filled by a swelling covered with mucosa, distinctly separate from the vocal cords and ventricular bands by a well marked sulcus. These swellings, the right being more marked than the left, could be reduced, but afterwards projected again. The laryngeal mucosa was thickened. The right side was then divided in the middle of the vocal cord by a frontal incision and then one saw very distinctly between the ventricular band and vocal cord, at a point corresponding to the normal ventricle and its appendix, that the ventricular cavity was reduced in size by a swelling starting from the lateral wall of the ventricle and upper surface of the vocal cord and projected forward between the ventricular band and vocal cord like a spur. Microscopical sections were not good because the specimen had become deteriorated by soaking in bad alcohol, but nevertheless one could distinctly see that there was considerable hypertrophy of the connective tissue not only in the swelling itself, but also in the vocal cord."

Chiari also described some specimens in which a fold of mucosa starting from the posterior lip of the entrance of the ventricle penetrated the appendix forming a large projecting mass in the ventricle. The specimen was taken from a subject who died from locomotor ataxia with atrophy of the vocal cords. Chiari says: "On a frontal section passing through the ventricular band and vocal cord there existed a projection about two millimetres long and three millimetres thick, starting from the external edge of the entrance of the appendix and bellying into the ventricle. Its lower end, very slightly club-shaped, was distant only five millimetres from the ventricle. This swelling appeared to be the frontal section of an hypertrophied fold of mucous membrane, composed of a rather thick connective tissue with round and fusiform cells. The round cells at the clubshaped end formed a follicle five millimetres long and two millimetres broad. The swelling was entirely covered by ciliated epithelium, the cilia being well preserved. There were no glands."

It will be seen that this description is in accord with Fränkel's ideas on the subject. Chiari also examined the specimen removed surgically in another case of socalled prolapse—and demonstrated that the tissue was an edematous hypertrophied fold of mucosa coming from the wall of the ventricle and projecting through the ventricle.

Koschier examined bits of tumors removed from sixteen cases of socalled prolapse of Morgagni's ventricle and he states that they were mostly large tumors more or less completely covering the vocal cord. He did not regard as prolapse the small, smooth elevations on the lateral parts of the mucosa so frequent on the upper surface of the vocal cords in chronic catarrh, tuberculosis, and syphilis of the larynx. "In these sixteen cases the tissue removed was covered by stratified pavement epithelium, sometimes considerably thickened, and cylindrical epithelium was rarely present. The tumor itself was composed of soft connective tissue, very rich in cells at some spots with rather large reticulated spaces. It was towards the periphery on the side of the epithelium and in the neighborhood of rather numerous vessels that the tissue was rich in cells. In all the specimens there was distinct edema of the tissues and recent or old hemorrhagic foci were also seen in some. In no specimen could neoformed mucous glands be discovered and at those spots where they did exist normally they did not present any morbid change."

Koschier's examinations do not give us any exact data as to the relationship of the tissue examined to the surrounding structures, but they do enlighten us as to their histological makeup, namely: 1. There was a catarrhal inflammation of the mucosa with more or less abundant round cell infiltration, especially in the neighborhood of the neoformed dilated vessels. 2. A hyperplasia of the subepithelial connective tissue, which composed the principal mass of the tumor.

In Lichtwitz's case the ventricular mucosa was thickened and inflamed and we cannot admit Koschier and Chiari's opinion who refuse to regard such cases as prolapse. Although these swellings are not large and do not cover the entire vocal cord or obstruct the glottis, they nevertheless are produced by the same process and the only difference that can be made between them is merely a question of degree.

Besides the epithelium and connective tissue, the ventricle also contains glands which, for the most part, do not undergo any pathological change. But it

can readily be understood that from the mere fact that they empty their secretion into the ventricular cavity they may participate in the inflammatory process. The excretory duct may become occluded and the gland continue to secrete, hence the ducts become dilated with the result that more or less voluminous cysts develop. Such was the condition of affairs in a case reported by Stoerk, of a male he operated upon three times for a tumor protruding through Morgagni's ventricle. Histological examination showed: 1, Severe chronic inflammation with hypertrophy of the subepithelial connective tissue; 2, cystic degeneration of the excretory ducts of the mucous glands. The first tumor removed was a large mucous cyst surrounded by smaller ones; the second and third were composed of numerous agglomerated small cysts. In this case the development of the prolapse was entirely due to the cystic dilatation of the glands and the relapses are to be interpreted in the same way.

Besides the sixteen cases already referred to, Koschier reports another case exactly like Stoerk's except that there was no recurrence. Histologically the tumor removed was oval, smooth, and with a rather long insertion. On section a thin walled cyst was found with a pedicle filled with a clear serous fluid. The pedicle was made up of loose connective tissue containing numerous mucous glands; in spots it was lined with cylindrical epithelium. Excepting a slight small cell infiltration of some mucous glands these did not offer any morbid change. Others presented cystic dilatation and were filled with serous fluid. All the tissue was quite rich in vessels, most of which were gorged with blood.

The cyst was oval, six millimetres long by three millimetres in breadth. The walls were thin and the external surface was covered by rather thick pavement epithelium, while the internal surface was lined with a single layer of cylindrical cells. At one spot this epithelium was flattened to give place to a perfectly flat pavement epithelium. The wall of the cyst was made up of soft connective tissue containing many vessels gorged with blood.

Now, if it be recalled that glands in clusters are especially abundant in the upper wall of the ventricle which is formed by the lower aspect of the ventricular band, and particularly in the region near the appendix, it can readily be understood that it is above all at the upper part of the ventricle that inflammatory processes extending to the glands will result in cystic formation.

Nevertheless they may likewise be encountered in all the rest of the ventricle, but in a lesser degree, because the lateral and lower walls of the ventricular cavity are relatively poor in glands.

All things considered, the examination has shown that a portion of the mucosa is forced outwards on account of the inflammatory process, be it the mucosa itself, or the submucous tissue.

PATHOGENESIS

These swellings, which push the mucosa through the laryngeal orifice of Morgagni's ventricle, are the product of acute or chronic inflammatory processes. They may be engendered by general diseases or by neoplasms. But we shall leave aside those cases, which for us should not be regarded as prolapse. We have especially in view cases of prolapse having an inflammatory origin. The ventricular mucosa is not more privileged than other parts of the mucosa of the larynx. And what is more, on account of the immediate proximity of the vocal cords, it seems quite natural that inflammatory attacks, so common here, should have a tendency progressively to involve the neighboring structures, including the ventricular mucosa.

In reality, experience has confirmed that which reason would lead one to suppose. Studying acute laryngitis, Koschier pricked the larynx of a dog with a steel pin. On each side, the pin passed through the anterior third of the ventricles and at autopsy, besides an intense acute laryngitis, the swollen ventricular mucosa assumed a domeshaped mass covering the anterior part of the vocal cord, which behind appeared to be free over quite a considerable extent. The bright red tumor was soft and could be reduced partially into the ventricle by means of a probe.

In sections it was seen that the swelling, which was inserted on the lower part of the lateral wall of the larynx, was composed of loose connective tissue with large meshes and imbibed abundant serous fluid. In spots the serous collection has so distended these reticulated spaces that they gave the impression of irregular cavities filled with a collection. No hemorrhages could be detected. The covering of the swelling was everywhere stratified pavement epithelium. The swelling of the mucosa was due to inflammatory edema producing considerable bombing and its appearance in the interior of the larynx.

Before experimentally inducing this acute prolapse in dogs, Koschier had the luck to examine a male patient with an intense acute laryngitis in whom, within the space of twenty-four hours, a leftsided swelling of the mucosa developed, which covered the corresponding vocal cord. The swelling subsided with the laryngitis that had caused it.

Such is the history of Beausoleil's patient in whom an inflammatory swelling of the ventricular mucosa developed quite suddenly during an attack of acute laryngitis.

In these cases of acute inflammation the mucosa is inflamed and raised up by an inflammatory exudate. But in subjects exposed to irritating dust, in those who use the voice immoderately—speakers, singers—and especially those who are obliged to cry in the streets in all kinds of weather, a soil will develop eminently favorable for the development of chronic laryngitis, hence a chronic inflammation of the ventricular mucosa. The inflammatory process does not at the onset give rise to these tumors that the early observers took for a total prolapse of Morgagni's ventricle. In its early phase, chronic catarrhal inflammation assumes more modest proportions and its evolution can be conveniently divided into three phases as follows:

The first phase has been described by Stoerk, who met with it more particularly in singers. The vocal cords present their usual whiteness, but closer examination shows redness confined to their lateral aspect which forms the entrance to Morgagni's ventricle, and the mucosa lining the ventricle likewise presents the same tumefied red aspect. Instances such as these are far more common than is generally supposed, and we have seen several examples. It is evident, however, that the diagnosis is difficult in

ordinary subjects, while singers, who are accustomed to control their voices, know when some slight change has occurred, imperceptible in people who have had no vocal training.

The second phase, the continual irritation of the ventricular mucosa, provokes a sharp irritation of the connective tissue which reacts by proliferation. Hence a swelling results, formed by more or less inflamed mucosa and subjacent connective tissue undergoing proliferation, which discretely appears in the entrance of Morgagni's ventricles.

The third phase is reached when these swellings are drawn in and pushed out in the act of breathing. The return circulation, interfered with by the connective tissue proliferation, encounters a still greater obstacle from compression of the swelling against the walls of the larynx. Hence a rapid increase in the size of the tumor ensues and soon it assumes the aspect of a polypus, which may occlude the glottis.

It would clearly be an exaggeration to regard the first phase as one of prolapse, and it would also be an exaggeration to reserve this term for the third phase of the process only. One can readily understand that the early observers gave the name of prolapse only to large tumors almost completely occluding the lumen of the larynx, but we believe that it is perfectly logical to regard as prolapse the process in its second phase because a part of the mucosa pushed out of the ventricular cavity escapes through the laryngeal orifice of Morgagni's ventricle and prolapses into the lumen of the larynx; therefore it is merely a question of degree.

We have already stated that we are especially concerned with acute prolapse, but we cannot ignore instances of the process met with in general constitutional affections and intraventricular neoplasms. Cases of this description may assume the characters of true prolapsus of Morgagni's ventricle and from the diagnostic viewpoint they cannot be overlooked.

In tuberculosis and syphilis, one frequently meets with swellings partially covering the vocal cords and appear distinctly to come out of the ventricle. These swellings, produced by gummata or tubercles, are very common, because the same morbid condition exists in the ventricle as in the other surrounding structure. As the affection progresses, the infiltration of the surrounding tissues soon makes examination impossible and the ventricular prolapse cannot be detected. In some cases the presence of ulceration on the vocal cords or ventricular bands determines an inflammation of the mucosa with a true prolapse following the mechanism we have described.

These cases are very difficult or even impossible to differentiate and among them a place should be made for many intermediary conditions which precisely constitute both the difficulties and clinical interest. Ventricular prolapsus observed in tuberculosis and syphilis is frequent, as the literature shows, and we would add the following case in which a pulmonary localization preceded the laryngeal lesion in the form of a voluminous tumor produced by intraventricular tubercles.

Case II.—Male, aged twenty-six years, had had hemoptysis at the age of twenty-three, since which time he had had frequent attacks of capillary bronchitis. Seventeen months ago hoarseness developed and latterly there had been complete aphonia. Manifest signs of pulmonary tuberculosis were present. But in spite of the lung lesions, thanks to overfeeding, the patient had not lost strength. He was distressed by the aphonia and difficulty in breathing.

Laryngoscopic examination revealed a cauliflower growth the size of half a hazelnut, which appeared to project from the left ventricle of Morgagni and partially occluded the lumen of the glottis. The left vocal cord was not visible except at its anterior and posterior ends. The remainder of the larynx appeared normal, with the exception of the interarytenoid mucosa, which presented a superficial erosion. With cutting forceps the tumor was removed. The result was immediate. The patient's voice became clear and breathing was free. Laryngoscopy showed that the left vocal cord was entirely free and looked normal. Eighteen days later some granulations were removed from the entrance of the ventricular orifice. One month later the voice was still clear and the breathing good. A year later the patient died from the pulmonary lesions.

We believe that Koschier is too exclusive when he confines the term of prolapsus only to large tumors covering the entire vocal cord, and that he is wrong in considering as a prolapsus of Morgagni's ventricle the appearance in the larynx of ventricular mucosa pushed out by a neoplasm on the ventricular mucosa. All this seems to us exaggerated and can only lead to confusion if we may judge by what takes place in the other structures.

All things considered, observers such as Mayor, Gouguenheim, and others, call attention to the fact that prolapsus of Morgagni's ventricle is met with in syphilis, tuberculosis and cancerous cachexia, but they are wrong when they maintain that these affections are the only cause of the prolapse. We even believe that the term prolapsus should be exclusively reserved for cases in which the appearance of the ventricular mucosa in the larynx is simply the result of a catarrhal process, because when the mucosa prolapses in syphilis, tuberculosis, or neoplasms seated in the mucosa of the ventricle, it is impossible by mere laryngoscopic examination to distinguish if the parts seen represent the inflamed ventricular mucosa or a portion of the neoplasm itself. The distinction is clearly important for both treatment and prognosis. Cancer is fatal, syphilis is cured by treatment, while confining the term prolapsus strictly to inflammatory processes the tumefaction present offers no other gravity than the resulting interference with the normal functions.

SYMPTOMATOLOGY.

From the clinical viewpoint prolapsus of Morgagni's ventricle gives rise to three phenomena, viz., dysphonia, dyspnea, and paroxysms of cough.

Dysphonia.—From the onset there is a fatigued voice, and for this reason singers will apply at once for treatment. At this phase no prolapse can be seen; there is a redness limited to the lateral aspect of the vocal cord. But the fatigue of the voice increases and the case then enters the second phase of ventricular inflammation. A true dysphonia ensues, sometimes reaching aphonia. It even is curious that the presence of these narrow swellings, which cover only a small portion of the vocal cords, produce a dysphonia often more considerable than tumors of the third phase. This fact cannot be explained only

by mechanical interference with the vibration of the cords and paresis of constrictors must play a part.

Dyspnea.—If the process is not treated, the third phase will be reached in which a large tumor completely occludes the orifice of the glottis and to the dysphonia, a more or less considerable difficulty in breathing will become added.

Paroxysms of cough.—Laryngoscopy will reveal a unilateral or bilateral tumor of the larynx, varying from a slight elevation covering the vocal cords to those enormous tumors which totally occlude the orifice of the glottis. The tumors are smooth, covered by a red, shining mucosa and are distinctly separated from the ventricular bands by a narrow sulcus. Soft in consistency, these swellings, with a large base, may be totally or partially reduced under the ventricular band, but, generally speaking, the reduction will not last and the tumor again appears. It is, as we have said, an edematous, hypertrophic swelling. The probe will reduce the inflammatory edema and the tumor, reduced in size, returns to the ventricular cavity, but immediately the infiltration of the reduced swelling returns and the ventricular mucosa again protrudes into the lumen of the larynx.

The tumor, being movable, acts like a valve during respiration and during phonation or coughing it increases in size and seems to protrude still further. These phenomena, which are very distinct in large tumors, are less apparent when the inflammatory process is still in the second phase. Nevertheless, even then the tumor may be seen to come out of the ventricle during phonation and distinctly cover the vocal cord. When the process is still in the indefinite stage between the first and second phase, something can be seen interposed between the ventricular band and vocal cord when the patient coughs, but returns into the ventricular cavity when the cough subsides as was seen in one of our cases. This fact explains the sudden appearance of the tumor in some of the reported cases. But following some effort on the patient's part, the tumor, which for some time freely appeared and disappeared, participates in the congestive attack in the larynx, suddenly projects and there remains if it is of sufficient size.

DIFFERENTIAL DIAGNOSIS.

The first phase need not be considered as it cannot be regarded as prolapsus. In the second phase the chief difficulty is the examination, on account of the hyperesthesia resulting from the laryngeal inflammation. One is struck first of all by a swelling seated on the lateral aspect of the larynx. It may be on one or both sides and appears distinctly seated between the vocal cord and ventricular band from which it is separated by a narrow sulcus and the question arises whether the lesion is syphilitic, tuberculous, or a catarrhal process. The laboratory will quickly settle the question. In the third phase there is a polypoid growth hanging in the orifice of the glottis, but it may be difficult to decide whether the lesion is a polypus, myxoma, papilloma, or a growth projecting from the ventricle. In the latter circumstance one must distinguish between a tumor exclusively composed of the mucosa of the ventricle and a nonmalignant or malignant neoplasm inserted on some spot of the ventricular cavity.

It is especially in these difficult cases that minor data assume considerable importance and one must carefully ascertain the way in which the tumor has appeared, because a slow development would rather favor the diagnosis of a neoplasm, while a more rapid evolution would rather indicate a prolapsus of the ventricle. Finally, when the diagnosis is not possible, a biopsy of the tumor should be made.

TREATMENT.

This is strictly surgical and can be summed up in a few words. The morbid tissue should be removed by a cutting instrument or the galvanocautery. If the tumor is large, it may be removed in several séances. After removal the base of insertion of the prolapsed mucosa should be gone over with the galvanocautery.

Common Errors in Urinary Diagnosis*

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In the days of the old gonorrhea clinic, with our general lack of methods of exact diagnosis, the many errors made were often excusable. With the advent the modern urology and its appreciation of more precise diagnostic methods the possibility of error has been greatly reduced.

The knowledge of cystoscopic and urethroscopic technic, the ureteral catheter and modern functional tests have been of the greatest possible value and have established urology on a firm basis. Modern urological instruments require considerable experience in their manipulation and the proper interpretation of what one sees. The modern methods of urine examinations are, however, within the reach of any worker in the field of medicine.

The average physician or surgeon either has not the time or the proper equipment to carry out the more advanced urological technics, but this is a greater reason why he should at least make use of the up to date methods of case recording, physical examination and complete urinalysis. By this means he will be able to arrive at an approximate idea of where the trouble lies and when beyond his sphere to refer it to the urologist.

We are fortunately rapidly getting away from the old idea, that urinary conditions, particularly those due to the gonococcus, are trivial affections. There are still some who attribute almost every urinary sign or symptom to the gonococcus and call the condition gonorrhea. These snapshot diagnoses are often unfortunate for the health of the patient and the reputation of the physician.

*From the James Buchanan Brady Urological Foundation of the New York Hospital.

The employment of rapid fire methods are not possible in the field of urological surgery and there is no domain of medicine in which painstaking effort is so necessary to arrive at a proper diagnosis. A considerable amount of time and care is also necessary in the preoperative and postoperative technics and it becomes early apparent to the student of urology that these technics are often vastly more important than the operative procedures.

I know of no other division in medicine and surgery that yields more satisfactory results and more grateful patients than urology when all of the necessary procedures are properly carried out. In one's office it may not be possible to carry out every detail, but a start should at least be made in that direction. It certainly is wrong to treat any patient after a casual inspection. A careful history, physical examination and a chemical and microscopical examination are always possible and should be employed; not only employed but carefully analyzed.

It is surprising how often the most elementary procedures are overlooked and thereby not only are the difficult cases missed but some of the most obvious are allowed to slip by. The following group of cases collected during the past few months well illustrates this point. In these case reports most negative data are omitted, as having no bearing on the reports.

CASE REPORTS

CASE I.—J. A., white, Italian, aged seven. Mother and father were living and well. There was no history of tuberculosis or malignant disease. The patient had had a natural birth, and had had measles at three years of age. About four weeks ago had an attack of sore throat, which lasted about a week and was treated with some home remedy. At present he complained of pain over left lumbar region extending toward the hypogastrium. The pain was not constant but appeared at least once a day and caused the child to cry out. There was also a lump in left inguinal region (inguinal hernia) which was said to enlarge during attacks of pain. This condition was diagnosed as renal calculus.

General inspection revealed a puffiness about both eyes, protruding abdomen, left inguinal hernia and considerable edema of both feet and legs. Cystoscopy revealed a bladder normal in every respect. Urine from both kidneys was acid, 1.025, contained an abundance of albumin, granular casts, red and white cells, urea about a half per cent., pyelogram negative. The sore throat in the history at once aroused suspicion and when it was found to be associated with edema of the lids and feet, it strongly suggested a postdiphtheritic nephritis. A throat culture was made and Klebs-Loeffler organisms found in almost pure culture. A diagnosis of postdiphtheritic nephritis was made. Condition cleared up by appropriate remedies.

The foregoing case, I believe, illustrates quite thoroughly not only the value of a careful history, but the proper analysis of it. It would have seemed difficult to overlook this case because the history was well taken and clear. In addition to that, as the late Dr. George Henry Fox would say, "It was written on the skin." The presence of what looked like a renal colic was adjudged sufficient for the original diagnosis.

CASE II.—C. H., white, male, thirty-six years of age; was born in the United States. The patient's father was living and well, his mother died of pneumonia at forty-two, one sister was living and well. He had had scarlatina in infancy, influenza in 1918, and no other illness aside from present ailment.

The patient had urethral discharge, urinary frequency, tenesmus and backache. He stated that he had acquired a Neisserian infection about eighteen months previously, which had improved and relapsed several times during that period. He insisted that he had always been regular in taking treatment and denied any venereal indiscretions. He said that about two or three weeks after the original appearance of the urethral discharge it subsided. At this time he stated there was also terminal hematuria and tenesmus. He had been to a number of physicians without securing any permanent relief.

This patient was referred to me as having chronic urethritis with the suggestion that I might help him by endoscopic treatments.

The first thing noticeable was that the patient's clothing did not fit him but seemed to hang rather loosely about his person. Loss of considerable weight was apparent and the patient said this was correct. He thought his loss of weight was incident to worrying about his condition. Sexual desire was increased but he feared to satisfy it. Facies were drawn but face was slightly flushed. Chest examination was apparently negative, both kidneys were palpable and sensitive on pressure.

First and second urine glasses were cloudy. Prostate was enlarged, sensitive, and its secretion contained pus cells. Third urine glass was very cloudy. There was a slight terminal hematuria. No gonococci were found in the urethral discharge. It was at once evident that the patient had an old urethroprostatic condition. The urine contained pus cells and some small rods that looked like splintered tubercle bacilli and were acid fast.

Cystoscopy showed trigonitis with slight edema, large eroded area near right ureter and ureteral orifice also appeared edematous. The urine from right ureter was cloudy. Left side showed clear urine. Bladder was cleared and ureters catheterized. Phthalein showed only a faint tint on right side after twenty minutes. Left side the phthalein response was normal. Urine from right kidney showed typical tubercle bacilli. The patient had a tuberculous kidney on the right side which had evidently gone untreated for some time. The important factors in this case that were overlooked were, first, history of mother dying of a pulmonary disease; second, the marked loss of weight and the facies of the patient were suggestive of tuberculosis; third, the absolutely necessary physical examination was overlooked in this case. The importance of a careful physical examination cannot be too strongly stressed in urological surgery, it simply must be done if you are going to do justice to your patient. By a thorough physical examination, I mean a general observation and examination of the patient. On questioning this patient, he stated that several smears had been made from his urethral discharge, but that a urinary examination had not been made as far as he knew. This case well illustrates the necessity of looking a little beyond the seat of the patient's

actual complaint. The coexistence of urethral disease and genitourinary tuberculosis is by no means rare.

CASE III.—Mrs. B. H., negress, aged forty-one. The patient's mother, father and one brother were living and well, sister died of a uterine condition at age of thirty-five. The patient had had measles and whooping cough in childhood. No other previous illness. She complained of pain in the lumbar region of both sides, most marked on the left, and slight burning on urination.

Patient stated that about six months previously she noticed a lumbago on the right side, and that about three months later it appeared on the left. She went to a physician who agreed with her diagnosis and treated her for lumbago during the time noted. At one time she had an attack of burning particularly at end of urination. Recently this had reappeared and had become more pronounced. She stated that the doctor once looked at her urine and said there was nothing wrong with it, except that it was a little cloudy.

The patient's general appearance was quite good, and aside from the fact that she was sensitive to pressure over the renal areas, nothing of importance was noted. The urine was acid, contained some mucous, red and white cells, colon bacilli and was cloudy. Cystoscopic examination showed a well marked trigonitis, particularly in the direction of the left ureteral orifice. Just at the lower border and in front of the left ureteral orifice there was a distinct, fingerlike papilloma which stuck up and appeared partly to occlude the orifice. Catheters passed readily into both ureters. Urine on the right side was normal. That from the left ureter contained a few pus cells and colon bacilli in pure culture. X ray pictures showed nothing. Functional tests were normal on right and slightly retarded on left. There was a pyelonephritis on the left side, caused by the obstructing papilloma. Removal of the projection with its snare and fulguration of the base cleared up the kidney lesions.

CASE IV.—Mrs. Y. D., Russian, aged thirty-six, housewife. Her mother and father were dead—causes unknown. Two sisters and one brother living and well.

The patient stated that she had never been ill until the present time. She said that about three months ago she began to urinate a little more frequently than usual and voided considerable urine. Gradually the frequency became more urgent with a decrease in volume. She had been treated by three doctors, two of whom said that they had examined her urine. The doctors all told her that she was nervous and gave her medicine for that condition. One told her that if her husband gave her a good thrashing it would probably greatly improve her condition and stop her foolishness.

Examination shows quite a well built woman of about 170 pounds, but with a decidedly worried appearance. She complained of frequency and urgency of urination, with at times dull ache in the lumbar region of both sides. The general physical examination was negative. The urine was moderately cloudy and showed numerous tubercle bacilli in the sediment, also pus cells in abundance.

Cystoscopy showed a well marked trigonitis, close to the bladder neck and tuberculous ulcers three in a row, just below left ureteral orifice. Catheterized urine from right side was practically normal. Left kidney urine showed numerous tubercle bacilli and pus cells. Phthalein was normal on the right: on the left a slight response was shown.

Diagnosis of tuberculosis of left kidney and bladder was made. This was a case where an ordinary urinary examination would have really made the diagnosis. I suspect that this was another case where the urine was looked at. Certainly if a microscopical examination had been made, the diagnosis could not have been missed. The good general appearance of the patient probably threw the physicians off their guard and caused them to blame it on the nervous system.

CASE V.—J. H., white, aged thirty-eight, United States. Family history and previous personal history negative as far as could be obtained. The patient was said to have been ill for about a week with typhoid fever. But for the past forty-eight hours had been complaining of great pain in perineum and at end of penis. Examination showed a scant purulent discharge from urethra. The prostate by rectum was greatly swollen, and during examination patient had quite an attack of pain and desire to urinate. The urine contained much pus. A prostatic abscess had ruptured into the urethra and the typhoid fever rapidly disappeared. There was nothing much beyond the prostate and patient made a prompt recovery from the acute condition.

In this patient little thought was given to the genitourinary apparatus, although the urethral discharge was still present. A simple question recalled the fact that he acquired a gonorrhea two months previously and went to a doctor who cured him in a few days.

SUMMARY

I have reported these cases because they so strongly emphasize the necessity of a careful history and physical examination of every patient who presents himself to you, particularly if it is a urological case.

They also show the necessity of a very careful examination of the urine, and how obvious cases of tuberculosis and other conditions may easily be overlooked by failure to do so. We are finding that a vast number of the lumbagoes and neuralgias of the lumbar region are either tuberculosis or other suppurative disease of the kidney or possibly stone.

We are justified in making a complete urological examination, including cystoscopy and ureteral catheterization in many of our cases of chronic backache and with prompt recognition and treatment they usually clear up. In reviewing cases one hears very frequently the expression, "My urine was looked at by my doctor," and it only too often means just that.

Kapsammer, in a lecture once said, "For chronic affections of the urinary apparatus, there is no diagnosis, no therapy without cystoscopy and without ureteral catheterization." There is much truth in those words, but a careful history, physical examination and a real uranalysis will certainly at least lead us in paths of correct diagnosis in the vast majority of cases.

229 WEST 101ST STREET.

Tuberculosis in Germany

BY S. ADOLPHUS KNOPF, M.D.
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One of the most gracious and dignified acts of our late regretted ex-President, Woodrow Wilson, manifested a few days before his passing away, was a promise to help the German intellectuals in their present distress. Mrs. Wilson, equally magnanimous, appealed to the men and women of America not to let the unfortunate tactlessness of the German officials, displayed at the time of her great husband's death, interfere with helping the starving children of Germany. But the intellectuals and the children of Germany are not the only sufferers in that unhappy land. According to a wireless dispatch received by *The Times* from Berlin on March 4th, fifteen million Germans are living on charity and five million are without employment. Berlin's public shelter for the homeless provides beds every night for 4,500 persons, though it nominally has accommodation for only 3,400. Of the children going to the public schools in a certain Berlin district, thirty per cent. went without breakfast and ten per cent. without a midday meal. How does this affect the tuberculosis problem in which we are all so much interested? In one Berlin district a sixth of the population had died from undernourishment, tuberculosis and allied diseases. According to Dr. Haven Emerson, who returned from there a few weeks ago, in some of the larger cities of Germany there were more deaths from tuberculosis in the first nine months of 1923 than in the entire year of 1921, and four thousand more deaths in 1922 than in 1921.

To ameliorate the condition of the undernourished masses; to come to the rescue of the suffering tuberculous patients; to help reopen the sanatoria which have had to be closed, is too stupendous a task to be undertaken by the tuberculosis workers in our country. Only such international benefactors as the Rockefeller Foundation, the Carnegie Institute, the International Red Cross, or our great millionaire philanthropists can undertake it, and the whole work should be under the guidance and leadership of such a great genius for national and international relief as Mr. Hoover.

To help the German intellectuals in general there exist a number of societies. One, known as the Relief Committee for German intellectuals and artists, was created in memory of ex-President Wilson, with former Ambassador James W. Gerard as president and Mr. Edward R. Stettinius, of New York, as treasurer. Another society is known as American Aid for German Medical Science, with Dr. Ludvig Hektoen, of Chicago, as president, and Dr. William F. Petersen, as treasurer. Still another is the Association for the Relief of Needy Physicians of Central and Eastern Europe, with Dr. William H. Welch, of Baltimore, as honorary president, Dr. Max Einhorn as president, and Mr. Henry Stenneck as treasurer. There are also a few smaller societies in New York and Philadelphia.

As far as I have been able to learn, the only two societies aiming to relieve the distress of the medical profession are the Hektoen and the Einhorn societies. Yet from reports made by American physicians who have visited Germany recently, it would seem indeed that, of all professions suffering under the unfortunate economic conditions of Germany, the medical profession seems to be the worst off. Sad and strange as it may seem, among our colleagues there the tuberculosis specialists are the most seriously stricken.

The situation has been described to me by Dr. O. Pischinger, the president of the Association of Sanatorium Physicians of Germany, as follows: The majority of private and public sanatoria have had to be closed for lack of food, coal and clothing, and the patients already undernourished had to return to their former homes. But the physicians in charge of these sanatoria lost both their homes and their means of livelihood. It does not require much imagination to realize what this homeless and jobless situation must mean to our unfortunate colleagues. Dr. Karl Heinz Blümel, the president of another society composed of tuberculosis specialists (*Gesellschaft deutscher Tuberkulose-Fürsorge-Aerzte*), described the plight of his colleagues, many of whom are so poor that they will not be able to come to their annual meeting or pay for the transactions of the contemplated reunion. Describing the absolute poverty of some of the former sanatorium physicians, Dr. Pischinger wrote me that many had to cancel their subscription to their organization's journal and that it was difficult to communicate with them. Thinking that to help the publication of the journals and to aid the physicians to come to the association's meeting would be a part of the work of the great Emergency Society for German and Austrian Science and Art, I wrote to Prof. Boas, its president, only to be notified that they are not in a position to help at this time. They are evidently in need of contributions also.

I have been fortunate enough to interest the Chicago society, of which Dr. Ludwig Hektoen is president and Dr. William F. Petersen is treasurer, in collecting and transmitting funds for the relief of the tuberculosis physicians. May I appeal herewith to my colleagues in our happy, prosperous America to do what they can? Send your contributions to Dr. William F. Petersen, 508 South Honore Street, Chicago, Ill. Prof. J. Schwalbe, Dr. O. Pischinger and Dr. Karl Heinz Blümel constitute the German committee for the distribution of the funds collected for the relief of tuberculosis physicians in Germany.

We owe to Koch the discovery of the tubercle bacillus, to Brehmer the sanatorium idea, to Dettweiler the rest cure. All three were Germans, but their disciples are in every corner of the globe and all civilized countries, except Germany, are now reaping the benefit of the work of these three pioneers. It is true, Germany was an enemy country until recently, but let us not be less magnanimous than our immortal President Wilson. "If thine enemy hunger feed him." May this appeal not be in vain.

Practical Therapeutics

INFANT FEEDING

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Infant feeding is probably one of the most frequent and difficult problems presented to every physician. I scarcely realized, however, how difficult it would be to cover such a large subject in a comprehensive and logical paper.

It is my object to deal only with the feeding of infants under one year of age that have for some good reason been taken from breast feeding. The reasons for and the problems of weaning, I shall not consider.

There have been so many changes in infant feeding within the past ten years that it seems wise to consider the problems in the light of present day knowledge. Infant feeding has not as yet become an exact science. It is still an art, as is the case with many other medical problems.

We have in this country at the present time, different systems of feeding in various schools. The multitude of procedures with the constant introduction of new plans and new foods, is ample proof that the present methods are not perfect. However, some of the present systems in use are excellent; but they are not perfectly simple, nor are they fool proof.

There has been an attempt on the part of many teachers to simplify infant feeding by making exact scales for feeding at different ages: stating amounts and quantities and so forth, for each age. This has also been taken up by the manufacturers of all forms of infant foods so that we are all familiar with the cards and the sliding scales which attempt to eliminate the difficult task of outlining a formula. The great mistake in these outlines from various sources is that they consider all children uniform for a certain age. While these systems are perhaps better than the old methods of former days, they fail in a large number of cases. No one system of feeding is good for all children.

In order to approach any feeding problem, it is necessary first to obtain certain information, and unless sufficient time and trouble are taken to secure this necessary information the chances for good results are poor.

In the first place a complete history of the child, from birth, must be secured. This must include the family history, home conditions, conditions at birth, the weight with gains and losses included: just what kinds and amounts of food have been given, and how they have been given. Then we must estimate the percentage of fat, carbohydrates, protein and starches furnished in the various formulas and the response of the child to these formulas: the appetite, hours fed, food between meals, condition of the bowels, vomiting and sleeping habits must also be ascertained. Of course, it is also necessary to have a history of the previous diseases, injuries or operations and a complete personal history.

After the history has been secured, the child should have a thorough physical examination. In order to give this examination, all the clothing should be removed and the child placed on a table in a good light.

It is well to have an outline to follow in order that no portion of the body will be overlooked. The best custom is to begin at the head and work down.

All this must be done because not every poorly nourished baby is thin because he has had improper food. A diagnosis of improper feeding should not be carelessly made in every case under weight. Tuberculosis and other wasting conditions must be taken into consideration and eliminated before the diagnosis is limited to socalled feeding cases.

The stools should be examined either at the time of the physical examination or as soon after as possible. The number each day and the character of the stools is important. Constipation, vomiting and other conditions should be indicated. It is a good plan to give the mother a chart on which these various points may be written. This will give the character of the stools for several days. It has been found that chemical examination of the stools is not absolutely essential in the average case. In a few difficult and obscure cases, the chemical and bacterial analysis of the stool is of distinct advantage.

With these facts, it is now necessary to correlate all information and to judge just what this particular child can best take. In considering the former foods, it is necessary to know, how much the child has taken, not how much has been offered; if the appetite has been good; and the condition of stools and the amount of vomiting present.

Through the study of the history and physical examination, we must first determine just what food we are going to give, afterward deciding the amounts, percentages, hours of feeding and other details.

It is now agreed that cow's milk is the best food for artificial feeding. But there are many grades of cow's milk. It may be dried, evaporated, malted, condensed and changed in every conceivable way.

The ideal milk for children would be a perfectly fresh raw milk from tuberculin tested cattle, obtained under perfectly sanitary conditions. This would give all the vitamines and a very low bacterial count.

Our certified milk is an attempt to reach this ideal. It has been proved that it is possible to deliver milk to the consumer on the day that it is secured. If this was done with the certified milk a better product would be delivered.

A pasteurized milk that is less than twenty-four hours old is probably the safest milk in the long run: but an honest certified milk has an advantage over the pasteurized, and would be my choice when it could be obtained. Due to the high cost of certified milk, a lack of uniformity in its freshness, and the propaganda for pasteurized milk, it seems to have lost some ground. Unless the highest qualifications are required, certified milk consumption will probably decrease in favor of the pasteurized.

The choice of milk to be used depends on several

factors. Probably the most important are the freshness and the bacterial count. The danger of stale contaminated milk is that the bacteria can easily cause gastroenteric infections. It has also been shown that the vitamine content of such milk is reduced. In order to reduce the bacterial count, pasteurization was introduced. Pasteurization of milk has markedly reduced infant mortality, and if pasteurization is not used to bolster up stale milk, the plan is an excellent one. There remain but two objections: that milk does not necessarily come from tuberculin tested cattle, and the antiscorbutic vitamines are largely destroyed. If it is impossible to secure good pasteurized milk, raw milk may be used.

Raw milk, uninspected and uncontrolled, is always a doubtful product. When there is a doubt about any milk it is safer to have it boiled. It should be remembered that boiled milk can easily become infected when allowed to stand for any length of time.

Boiled milk is sterile but has the big disadvantage that the antiscorbutic vitamines have been destroyed. However the vitamines in most feeding cases can be controlled by a proper knowledge of the existence of the possibility of scurvy and by the administration of orange juice, tomato juice or other high vitamine containing foods.

Dry milk has the advantage of being easily transported and prepared. It is asserted that the vitamines have not been destroyed. If this is true the only disadvantage is that in most cases a portion of the cream has been removed.

Evaporated unsweetened milk is of advantage in some cases but spoils easily if left in the original can.

Malted and condensed milk are both sweetened far beyond the average requirement, frequently making children gain well in weight but not securing vigor and high resistance.

In feeding children it is a mistake to aim at weight alone and disregard other points in development. If we desire well developed and vigorous children we must not overlook the possibility of rickets and scurvy.

It is well to mention frozen milk. It has been found that children are frequently upset by frozen milk and that it should be avoided if possible.

We have spoken of the vitamines in milk. The water soluble vitamine, the absence of which produces scurvy, is found in fresh human milk and cow's milk. It is destroyed by heat and by age. Whenever there is a deficiency in vitamines it is necessary to supply them by orange juice or some vitamine containing food. It should be remembered that milk formulas containing less than two per cent. of fat predispose the children to rickets, due to the deficiency of fat soluble vitamines in the food, especially under poor hygienic surroundings. This applies especially to skimmed milk, condensed milk, evaporated milk, malted milk and dried milk formulas. The use of codliver oil which is rich in fat soluble vitamines will to some extent prevent rickets. The deficiency in minerals and vitamines is made up by some pediatrists by the addition of powdered spinach and other vegetables during the sixth and to the ninth months.

There has been for many years an attempt on the part of the greater portion of the medical profession to discover some one food or modification of foods that will solve the feeding of all infants.

Some of these foods represented largely by proprietary preparations with little merit have been lauded by their manufacturers far beyond their true value.

Many of these foods are of real value in selected cases but an attempt to feed all children on any one of the foods will cause failure among those children whose digestions are not adapted to the particular food.

Numbers of our profession have at times held extreme ideas in regard to milk modification. The attempt to modify cow's milk to imitate exactly mother's milk has fallen largely into disuse. It is also well to speak here of the top milk and rich fat mixtures as advocated by Winters and others. Most of the profession have deserted this method. The other extreme of skimmed milk is now a more popular method and is used by some almost exclusively. Protein milk or eiweissmilch of Finkelstein has enjoyed a great popularity in the past twelve or more years. At first this seemed to be the food for all and is still used by some of the pediatrists of this country in nearly all of their hospital cases, especially in the presence of gastrointestinal infections.

Marriott is a great advocate of lactic acid milk. He used whole milk which has been changed by the lactic acid bacillus. This milk is diluted with fifty per cent. corn syrup. It is occasionally used with water, but he states that he has almost universally good results with the stronger mixtures.

Ladd of Boston secured good results by using olive oil, emulsified, by special process, in the place of cream of milk.

Shaw of Albany is using sour milk with curds broken up in many of his institutional cases. In the last three years several writers have reported excellent results with butterflour mixtures in feeding.

The history of infant feeding, if it teaches anything at all, will lead us to expect that any of these methods of feeding which are now affirmed by their users to be nearly perfect, will in a few years fall into more or less disfavor. They will take their places along with other methods of feeding to be used in special cases. It simply proves that no one food will ever be universally successful for all infants. Still after looking over all the old and new preparations, we are led back to fresh sweet milk on which nearly every child can be fed if the formula is properly adjusted and prepared.

Of course before the formula can be worked out, we must determine the amount of food to be taken. It is quite safe to start out with an amount somewhat less than you think the child can accommodate. If the diet is advanced slowly, we learn from experience just the amount that is best taken by the child. If too little is given, the child shows the effect of loss of fluids and is restless, cries and is irritable. If too much is given, the child refuses the last portion of the bottle and may vomit the overflow.

How often the child should be fed is a question. Today few children are put on the two hour schedule even in maternity hospitals. The tendency is to lengthen the period to three or even four hours. Advocates of four hour feeding schedules are enthu-

siastic over this method asserting that the child gets more rest, takes the food better and is less likely to vomit. The greatest argument in favor of the four hour schedule is, that it is much easier to handle in the hospital, and secures more rest for the mother at home.

At one time it was thought by Holt, Rotch and others that if cow's milk could be so modified as to have the same percentages as mother's milk then the solution of infant feeding would be found. In the hands of skilled men good results were obtained by modifying cow's milk to approximate the mother's milk. This, however, was a difficult proceeding for the average physician and in course of time another school developed that diluted cow's milk in the simplest methods possible using a half and half, two and one, three and one, and other simple mixtures of cow's milk and water.

Probably with a vast majority the simplified methods of feeding are giving better results than attempting to feed on an exact percentage basis. I am of the opinion that simplified formulas are sufficient in a large majority of cases, but that many cases are found in which this does not meet the problem. Both methods should be understood and employed to suit the particular case. The men feeding simple formulas should know approximately the percentages of fat, carbohydrate and protein that are being given. By thinking in percentages, one has a more accurate idea of just what one is doing.

There are many methods of working out modifications and each physician chooses the plan that best satisfies him.

The two following methods are simple, easy to work out and give nearly any formula desired.

CALORIC METHOD OF MILK MODIFICATION

Working out a formula from a caloric basis can be shown by the following example:

10 pounds. Weight.
50 calories per pound.

500 calories required.
120 calories supplied by one ounce of sugar.

380 calories to be supplied by milk.

This sum is divided by 20 (calories in one ounce of milk). This gives 19 ounces of milk required.

Seven feedings of five ounces are to be given (35 ounces).

35
19

16 Water required.

Formula is then as follows:

Whole milk	19 ounces.
Sugar	1 ounce.
Water	16 ounces.

PERCENTAGE METHOD OF MILK MODIFICATION

The percentage method is probably most accurately worked out by the use of 16% cream, skimmed milk and water.

Problem: 20 Ounces required of following percent

Fat	Sugar	Proteid
2	6	1

$2 \times 20 = 2.5$ ounces of 16% cream required.

16

$1 \times 20 = 6$ ounces of skimmed milk required.

3.2

We already have 2½ ounces of cream containing 3.2% proteid, so this leaves 3½ ounces of skimmed milk required.

6 ounces of milk contain sugar, $\frac{6}{20} \times 4.5 = 1.3\%$ sugar in the milk. 6 minus 1.3 gives 4.7% amount of sugar required $4.7 \times 20 = .9$ ounces of sugar required.

100

20 minus 6 (milk in formula) 14 ounces of water required.

Formula:

16% cream	2½ ounces
Skimmed milk	3½ "
Sugar	.9 "
Water	14 "

Calculations of this type always look more formidable than they really are and a little study will show that either method is fairly easy to work out. The difficult part is to know just what formula you need for the particular case, rather than how it is to be obtained.

It is obvious that exact percentages are not actually obtained outside of careful laboratories, because of the changing character of percentages in the milk from day to day. From a practical viewpoint the results are exact enough.

Working with these two methods nearly any modification of milk may be obtained. Few cases will be found where other means of modification will be needed. It is difficult to find any two methods that will give as wide a range of application.

REASONS WHY FORUMLAS ARE OFTEN UNSUCCESSFUL

Many reasons are found why our formulas do not give success. The cause that is most often given is that the child has a feeble digestion or some peculiarity. The peculiarity is most often an idiosyncrasy toward cow's milk or an inability to digest whole milk or some portion of cow's milk. An intolerance for the food may have developed by repeated attacks of indigestion, gastroenteritis, enteritis, or other conditions. Many children offer a great problem to the physicians before proper food can be determined.

There are few babies, fortunately, that are absolutely unable to take cow's milk in any form, due to protein sensitization. But there is a large group that is unable to take certain constituents of cow's milk.

Fat or cream causes more upsets in children than either protein or sugar. More children are found with fat indigestion than is generally supposed. Children able to take high percentages of fat in mother's milk often fail to take the same amount of fat in cow's milk. Fortunately for the children this is becoming well known and some physicians even advocate giving all children skimmed milk. Low fat formulas are the safest to follow, but we should not give all children skimmed milk. We should remember that children fed on low fat over a long period of time are prone to rickets.

Once fat indigestion has developed the child soon becomes intolerant towards other foods, and the indigestion is likely to prove difficult to overcome especially in the summer months.

For this reason a physician should watch most carefully the percentage of fat used and should always be on guard when using higher than two per cent. fat in very young infants. Fat indigestion is usually indicated by loss of appetite, vomiting, loose green stools and loss of weight.

The protein of cow's milk causes much less trou-
le than was formerly suspected, except in the type
f intestinal infections known as ileocolitis.

Sugar of milk itself in normal amounts rarely
auses trouble. It is only when artificial sugar is
ıtroduced that carbohydrates become a problem.

There is a tendency on the part of most physicians
) feed too high a percentage of sugar. This is due
) the anxiety on the part of the parents and of the
hysicians to have the children gain in weight and
) overcome constipation. While it is true that feed-
ıg formulas high in sugars will frequently give
reat increase in fat, it is also true that the weight
ained does not represent the best form of bodily
ssue or resistance.

Usually one ounce of sugar in a twenty-four hour
ɔrmula is sufficient. In younger children less must
e given. It is only by experience and by carefully
ying out the sugars that the proper ones can be
etermined.

GREAT CARE NEEDED IN ARTIFICIAL FEEDING

Aside from the milk and its modifications, there
:e many other reasons why formulas fail. In the
rst place, is the nurse or mother following in-
ructions?

The directions should be not only given by word
f mouth, but should be written out in full and
ɔthing left to the memory or inventive genius. The
structions must be much more simple than would
em to be actually required because in the stress
f taking care of a sick child the average mother
nds it most difficult to follow instructions.

There is no field in medicine that requires more
udy than the care of a difficult feeding case. Each
ıse should be given most careful consideration and
should be realized by the physician and the par-
ıts that considerable time may be required to secure
good result.

While the problem is difficult and exacting, good
sults can be obtained in the majority of cases.
here are few results more pleasing to see than the
turn to health of a poorly nourished child diag-
ɔsed as a feeding problem.

184 Alexander Street.

THE USE OF PROTEIN MILK IN PEDIATRICS

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Ever since the introduction of eiweissmilch by
inkelstein, the use of some form of protein milk
digestive disturbances of infancy and early child-
ɔod is becoming more and more generalized, par-
ıcularly on the Continent. In America, its adoption
ıs been rather slow, in spite of the fact that it pos-
sses all the advantages of the commonly used bar-
y water, besides its value as a temporary food.

Protein milk is essentially a calcium caseinate,
oduced from the milk by precipitating the casein
erefrom by means of rennet or other protein
agulant, and rendered soluble by neutralization
ith calcium hydroxide and subsequent evaporation
dryness. It has all the advantages of Finkel-
stein's eiweissmilch, with the added advantage of practicability and simplicity of preparation, requiring as it does only milk and water, or only water in its preparation. It is quite stable, keeping well for about six months, and longer, on ice. There are several brands of protein milk on the market.

The benefits derived from the use of protein milk are due to its high protein and low fat and sugar content, and the presence, in some, of lactic acid organisms. The percentage composition of the various protein milk preparations are similar to Finkelstein's eiweissmilch, the analysis of which is: Protein, three per cent.; fat, 2.5 per cent.; carbohydrates, 1.5 per cent; salts, 0.5 per cent. The high protein content favors intestinal digestion, because of its tendency towards intestinal alkalinization. In addition, the alkalinity produced counteracts the acid bacterial fermentation. The calcium present facilitates the formation of lime soap stools. The lactic acid organisms are also antagonistic to the acid bacterial action.

Protein milk, however, is not a permanent food, and while its use is beneficial for the period of the disturbance, it is not to be continued longer than necessary, usually no more than five or six weeks at the longest. Since its food value is but small, having a caloric value of only about twelve calories to the ounce, some form of carbohydrate should be added as soon as feasible. It is a dangerous procedure to continue the protein milk more than one or two days, without the addition of some sugar, for while the intestinal symptoms may improve under its use, the harm done to the nutritional status of the child, would more than overbalance the benefit upon symptoms. At first, one per cent. sugar is to be added and gradually increased up to five per cent., making a total sugar content of about seven per cent. The higher sugar percentages, however, are only required with the prolonged use of the protein milk. The most desirable sugar is dextrimaltose, because of all the sugars maltose is least apt to ferment. In some cases cane sugar can be used, up to about two per cent., but not lactose.

The percentage of fat in the protein milk depends upon the quality of the milk used in its preparation. If a lower fat content is desired, skimmed milk or buttermilk may be used in part, or instead of the milk. The use of buttermilk is particularly advisable in some cases, where a stronger lactic acid bacterial content is desired. This is indicated in dystrophic and atrophic nutritional conditions, with small intestinal diarrhea.

Protein milk is indicated in all fermentative diarrheas with green, sour, acid, and loose stools, with or without mucus, where the fermentation is due to carbohydrates. It is also beneficial in infectious diarrheas, where the dyspepsia is secondary to some infection outside the alimentary canal. Dyspepsia due to fats and diarrheas of mixed types are also favorably affected by protein milk.

CONCLUSION

Protein milk is indicated wherever there is a favorable medium in the intestinal canal for the work of acid producing bacteria, as is found in fermentative diarrheas.

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Historical Medicine

Medicine and Philosophy in Virgil

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(*Concluded from page 312*)

I was once much interested in this journal (14) to draw attention to the connotations the word *purge* still has—how the African mother could see no reason why she should not purge her son of heresy by means of rhubarb and jalap. Virgil was no doctor and he did not pretend to say what was the change wrought in the mystic aura of the soul or of the body in Hades, but it had to be accomplished before entering Elysium and when that day finally came the purified changed their abode and after a thousand years they were again embodied in fresh generations of mortal men. Surely the lines can have no other meaning as to the persistence of disease after death, for when this comes:

> non tamen omne malum miseris nec funditus omnes
> corporeae excedunt pestes, penitusque necesse est
> multa diu concreta modis inolescere miris. (5)

Except for this and the metempsychosis, one can not but be struck by the similarity of the belief of Mediaeval Christianity with the report Anchises made as to the fate of immortal souls. The persistence of disease after death goes back as a belief I do not know how far, but much further in Greco-Roman theology than in Virgil. Euripides (17) makes Hecuba say while she is winding roller bandages around the gaping wounds of the bruised body of poor little Astyanax: "Thy father (Hector in Hades) will attend to these for thee."

Virgil busied himself with the chemistry of the soil in his early poetry, recording doubtless the practise of the model farmers of the great latifundia of the day, but to this I have referred elsewhere (15). Closewoven baskets and corn sieves were his soil filters. "With a stout pole take them down from the smoky rafters of the peasant's cabin and come to the fields with me and I will show you how to test the soil," he said, but he invites us also to the cattle pens and pastures where he promises to teach us the causes and the symptoms of disease in the flocks. The "scab" attacks the sheep because of the cold rain. The ice gets into their coats and when these are soaked through later the sweat and the dirt against the hide irritates it and sharp thorns tear it. The shepherd washes the fleece and makes application of an ointment of oxide of silver and sulphur and pine tar, squills, hellebore and black bitumen, but the result is no better than if one takes a knife and cuts out the ulcer to its furthermost ramifications, for the trouble thrives and is nourished when protected, but the shepherds refuse to let the doctors put their hands to the sore and rest their hopes of cure on the gods. When it gets very bad, however, and the animal has high fever, to subdue it blood must be drawn from the vein at the bottom of the foot. Praying to the gods, slashing a sick beast's foot or pouring turpentine in the hole left by a jagged nail, or splitting a cow's tail and rubbing sa in it for the colic, or all that goes under that name wit modern shepherds and cowherds and primitive hors doctors, is no improvement on treating the "scab with scabs made of muck, but Virgil we see turn to the knife. On the whole it is not a bad pictur of the farmer doctoring of my day for sick beast How much better the knife is for such parasitic di ease is doubtful, but does it not bid us pause an think a moment of the long ages during which wh seems such aimless therapy for man and beast ha ruled the world? Think of the countless myriad of socalled rational beings who have believed in an practised such therapy and ponder if we, mere in sects of a day in the abyss of time, are likely to hav wiped it all out and put something which is th true truth in its place.

Primitive man's first instinct is to hide diseas to cover it up. When he falls too ill himself t stand up and fight for his life, like a dog it is his in stinct to crawl into hiding and die or if he recover in his inmost soul, whatever has been done for hi it is the gods he thanks and he is probably not far o the trail. He began to hide ulcers under a plast as a sort of atavistic instinct, but we have to trav further into the story of the beliefs of primiti man than I can undertake to do here to get a hi of why he first began torture as a method of trea ment, burning, blistering, bleeding, scarifying—an I am encroaching on the memories of practise o some still living. It is a long ghastly record, th torturing of the sick in the name of science, an Virgil was skirting the truth when he intimates th kind of shepherd doctoring he describes was derive from desert dwellers, who feasted on curdled mi mixed with horses' blood; but he prefers the kni to all herb doctoring:

> . . . siquis ferro potuit rescindere summum
> ulceris os. (6)
> . . . carry the knife clear to the end of the sinus.

There are other ills of cattle, more serious by fa and these were contagia you must shun by keepi your flock far from contact with infected herds. Th symptoms were described with a realism as to ge eral phenomena, which is so striking it would sure to arrest the attention of any young farmer lad, if, miraculously, any such read the text Virgil. Seneca declared (12) Virgil had no desi to instruct the farmer, but wished to please h readers and it at least attracts the attention of th reader who can recognize the merits of the muses not the symptoms of the diseases of the beasts of t field. For the eye of the farmer's lad, who m have turned to doctoring his own kine by the tu this meets it, we may paraphrase Virgil's text, ro bing it of its magic therby. When you see one the cattle far out in the field, lying down more oft

the cool shade of the trees or following last be-
nd its comrades, nipping listlessly the tops of the
asses as it passes or, as it lies down, reaching out
graze and coming belated in at night, stop the
il at once with the sword before the dread con-
gion spreads in the heedless herd. Many of these
ttle plagues sweep through the country side like
whirlwind over the sea, seizing not upon here and
ere a few in the herd, but suddenly in the summer's
eat it wipes out the shepherd's hope, not of gain
one, but of livelihood, for all the race of kine
erishes thereabouts. Among the Noric Alps from
e shelters on the hilltops one can see the shep-
erds' walks and the woodland glades far and wide
eserted. Wild animals as well as the tame lie dead
the pools, water as well as the food is tainted.
vidently such disasters were as calamitous to a
untry side of peasants as war or a pest among
en. Besides frantic appeals to the gods and fre-
uent immolation of victims, they slaughtered the
ck animal as soon as the disease was manifest in
, at least Virgil considers this
e wise thing to do. The
octor's art is of no avail. The
entaur Chiron and Melampus,
ho is famous for having
ured the madness of the
rgive women, themselves re-
red baffled from such a call
pon their skill. The despair-
ng farmers, with death and
uin staring them in the face
an find no sale even for the
ides. Anthrax?

Fig. 2.—From the Pictura Ornamenta Codicis Vaticani Vergilii.

Primitive pantheism is the
orm of mysticism we have
ound in the youthful Virgil
hose boyish poem on the gnat
r mosquito has transcendent
erits, but bears the unmistak-
ble earmarks of youth. At
he crushing of the insect he
eflects that it, too, has a share
a God's universal scheme. It, too, has a soul,
hich is its connecting link with nature and he
akes the shepherd pay a tribute to it in lines
have quoted above. The homilies handed out to
he young have always had a phase of this. Go to
he bee, thou sluggard, the busy bee, whose industry
hou shouldst imitate and whose labors result in
narvels of God's care for the lowliest of His crea-
ures, He, who marks the fall of the sparrow.
hat is the spirit of the Culex and one might think
he Christian Fathers could have found in this that
ffiliation with their faith which made Virgil a sym-
athetic figure of a pagan past, but that was not the
train of piety which distinguished the early church.
t was one entirely too anthropocentric to feel deep
n its spirit that brotherhood with all living things
hich has entered into modern Christian concepts,
erhaps in some mysterious way from modern con-
act with oriental civilizations, but which so per-
neated the pagan beliefs of antiquity. Virgil, too,
lrew his homily from the bees in one of the Geor-
ics (6). I will not pause to show how erroneous
ere some of his ideas as to the biology of bees, but
hasten to the lines which fill out the budding
thought the boy exhibited in the Culex and which more clearly than any I know express that strain in pagan belief which is finding its echo in the modern humanitarian spirit.

> Nunc age, naturas apibus quas Jupiter ipse
> addidit, expediam, pro qua mercede canoros
> curetum sonitus crepitantiaque aera secutae
> Dictaeo caeli regem pavere sub antro. (7)

The King of Heaven himself in the Cretan cave had had reason to mark the highly organized city state of the bee and the brotherhood which antiquity felt with all living things lies at the bottom of much trouble for us in some of its extravagant modern manifestations. The antivivisection movement is anathema to modern science, but it seems to me that modern science, at least modern scientific medicine, does not comprehend the springs of this movement are so deep grounded as they are in the philosophy of past ages as well as in the encroaching religious beliefs of modern times. These are receiving constantly stimuli in western lands from oriental sources. The sooner modern science comes to realize it is up against one of the greatest and most powerful tenets that have ever swayed the minds of mankind and that it behooves it in its own interest to become acquainted with its history the sooner it will arrive at some compromise which is inevitable in the long run. If too long deferred the very foundations of anatomical and physiological science will be shattered. Legislation in the old world as in the new is but the field on which this ominous deeplying thought of mankind is being exhibited. Deference must be paid to this sentiment as it is one of the cosmic forces which are too great to resist, however destructive we may think they are to our interests in biological science. The development of a spirit of compromise will save a world of trouble, perhaps disaster.

Virgil in magnificent verse lays this mighty force in pantheistic philosophy before us and let no medical man think it is foreign to his interest as a member of a profession whose highest boast today is that it is becoming scientific. "They say there is in the bees a portion of the divine mind and a breath of its ætherial presence, for God permeates all things, the stretches of the land, the vast expanse of the ocean and the depths of Heaven itself. In all this are embraced men and herds of cattle, all manner of wild beasts as well, all on birth have their feeble lives protected" (8). When modern humanitarianism, let us not call it sentimentalism, arrives at the point of musing tenderly over the crushing of a mosquito, "parve Culex," it is going to be hard sledding for some of the activities of biological science. The revival of mysticism if it tends toward this growth has more than a passing interest for us. It was a long flight, in Virgil's artistic evolution, from smash-

ing the "parve Culex" to the tragic crushing out of the life of Dido. It is singular how people will strain at a gnat and swallow a camel, how tender hearted ladies will kiss their lords goodbye on the way to filling little rabbits and the feathered tribe full of shot, and shudder with horror at the inoculation of a guineapig and usually refuse to consider kissing the man of science. They will read unmoved the headlines of horrid misery in the track of the plague and then start expensive farms for the support of decrepit dogs and cats and horses. But we have no time to point out the inconsistencies of human nature. They have been noted before. The practical thing for us to do is to exercise more tact and more real supervision over the aspirations of the scientific youth ready to wade in the blood of his fellow creatures, regardless of their pain, through scenes calculated to shock the sensibilities of modern pantheists. The fact that Virgil's shepherd carried out the funeral obsequies for a murdered mosquito and that Æneas did not wait to see Dido's soul fly up to the winds, *"atque in ventos recessit"* (3), with the smoke of the pyre on which she died for love of kisses from him, is a joke we can regale one another with, but it has nothing in it calculated to move the ladies of the Society for the Prevention of Cruelty to Animals in our favor.

It was a long flight from the Culex to the Æneid for Virgil, but whether in boyhood or in the splendor of his mature years we may easily find traces of the philosophy of his day, not the all pervading pantheism alone, but the doctrine of the pneuma which was in a way a corollary of it. Dido's soul went back to the winds at the end of the fourth Æneid just as in the fourth Georgic the pneuma may be found as the efficient agent of the pantheistic scheme of the phenomena of the bees, and it is in the winds that blow the shepherd hears the plaintive tale of the wandering soul of the Culex. In Homer we read of the horses of Achilles and one of them was sired by the North Wind, which, although it may be solely a trope for his swiftness, partakes much more of realism in Homer than it would in the lines of his degenerate successors of our own day. It has not been difficult to collect evidence of the all pervading doctrine of the pneuma in many other passages of the Iliad (13) and we may plausibly take it that it was literally meant, when we become aware of certain passages in Aristotle and Virgil. For the inference receives direct support in the verse of the latter. Indeed this is quite evidently one of the passages in which he had in mind incidents of the Iliad, which he remodelled after his own fashion. Aristotle had given credit to the popular belief that a pheasant hen was sometimes impregnated by the wind blowing on her. Lucretius, to whom Virgil owes much both as to his philosophy and his art and to whose great work he was devoted in his youth, refers (17) first to the humoral doctrine when he says some liken the nature of the soul to that of the blood but some, if you choose liken it to the wind.

> et se scire animae naturam sanguinis esse
> aut etiam venti, si fert ita forte voluntas.

All sorts of such beliefs have been found among modern primitive tribes, a leaf falling on the abdomen, a stone or a fish in some way producing the state of pregnancy by its presence—all of them relics of the time when the real cause of impregnation was unsuspected. In the Georgics, hearkening back doubtless to Homer the poet says the mares, when in heat, ranging the rocky pastures near Thebes, from whose genital secretions love filters were made, standing on the lofty peaks and facing the wind become pregnant without receiving the attentions of the stallion:

> . . . . . illae
> ore omnes versae in zephyrum stant rupibus altis
> exceptantque levis auras et saepe sine ullis
> conjugiis vento gravidae (mirabile dictu). (9)

However, the peasants whom Virgil knew put no such chimerical expectations into the practical conduct of life for they fed the sires of their herds that their offspring might not lack vigor, but the females of the flocks at the breeding season they kept fasting and like our poultry breeders today gave them exercise to the point of fatigue to increase their fertility and lower the mortality of parturition. For when Venus languishes in laziness and luxury from lack of exercise the seed falls on barren ground, thus recognizing obesity as associated with the sterility of the female (10).

The author's references will appear in his reprints.

Contributors to the Science of Medicine

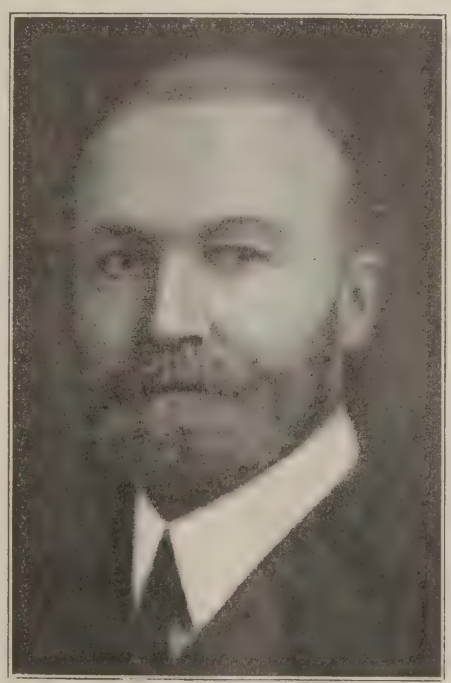
JOHN BENJAMIN MURPHY, M.D.,

"Doctor Murphy," writes Dr. William J. Mayo in a biographical sketch of the great physician, "is the surgical genius of our generation." Murphy's successful medical career, the many prominent positions that he held, both as teacher and as physician, and the numerous honors heaped upon him in this country and abroad, bear witness to this high place in the science and art of medicine.

Murphy was born of Irish Catholic parents in 1857 at Appleton, Wis. He received his elementary education in the public schools of his home town, and his medical education at Rush Medical College, with two years of postgraduate study at Vienna. Ability as a teacher was probably Murphy's most prominent and distinguishing characteristic, but he also attracted universal attention among surgeons by his invention of the well known Murphy button, recorded in a classical article in the *Medical Record*, 1892, and his latter years were notable for his work on deformities due to infections of the bones and joints. His writings on surgery of the lungs and of the nervous system have also received universal

ecognition. His wife, who was Jeannette Plamonlon, of Chicago, was his constant helpmate and inspiration throughout his career, and often acted as his chief laboratory assistant. The John Benjamin Murphy Memorial Hall of the American College of Surgeons in Chicago stands as a perpetual reminder of the classical nature of Murphy's work, the honor in which he was held by the members of his profession, and the inspiration of his teaching.

Murphy has been compared in the impression he made upon his audiences, to Lincoln. The tall, gaunt frame and the harsh, meagre, strident voice were the same. The most striking difference lay in the fact that Murphy was one of the handsomest men of his day, while Lincoln was exceedingly plain. Murphy had no such command of language as Lincoln, but both had the faculty of deeply impressing their hearers—"when they spoke they seemed to be delivering a message charged with truth and pregnant with confidence and hope," writes Sir Berkeley Moynihan. This power of complete selfexpression seemed to come, in the case of Murphy, from his burning and quenchless enthusiasm for life in all its manifold activities. His attitude toward life, however, was grave, serious; he was always much in earnest. Except to a very few, he was not responsive nor genial as a friend; hence he was admired and respected by those who knew him, rather than loved. His work was so obviously brilliant and his position in his profession so secure that he had the rare experience of never being even touched by jealousy except in the earliest years of his career. A strange thing was that Murphy, with all his personal magnetism and brilliant work, never trained a worthy successor—never left a disciple to carry on his enthusiasm, his glow of life, his fervor and devotion to his work.



JOHN B. MURPHY

All his activities, both of mind and of body, were characterized by an extreme orderliness. He worked always with a clean desk before him. His method of presentation was without exception the same: a wide survey of the subject to be discussed, made interesting by the magic of his personality and conception of it; disclosure of the gaps in our knowledge of the subject; suggestions as to the means by which that knowledge or a want in our technical methods could be made good; a record of experiments to elucidate or solve a difficult point; a wealth of clinical observations and a formidable array of arguments, leading to an inevitable conclusion stated in terms easily comprehensible to all. His mind was always orderly, eager for new truths, and expectant of them. He was an adept in making classifications simple and easily remembered of the most apparently complex subjects. All his efforts were worthily expended—he never wasted his brilliant energies on hack work nor on things that could be equally well done by others. Yet throughout his whole life he overworked. He might have lived ten years longer, had he not spent himself so lavishly. But he had only one speed for work, and that the highest that his great energy could command. One of his frequent remarks was, "I do not wish to linger after my work is done." Yet all who knew him felt that medical science would have received many more contributions from so brilliant a mind and personality had death not claimed him in his sixtieth year.

Sir Berkeley Moynihan, in his brilliant memorial address on Murphy published in *Surgery, Gynecology and Obstetrics,* says of the great surgeon in his clinics: "As he began to speak, one felt a strange sense of disappointment, even of dismay. For, while the handsome face and upright figure were things of real beauty, the voice in which he began to speak was quite unpleasant. It was harsh, even raucous, shrill, apt to wander into other keys. . . . But as he continued speaking, the voice gradually ceased to distract; it became smoother, quieter, and more evenly pitched, and all thought of it was now lost in rapt attention to the matter. For things were happening. . . . The whole intellectual mechanism underlying a great subject was being shown both in detail, and in all the majesty of moving parts. . . . And then Murphy would operate. . . . He was of the true faith. He believed in safe and thorough work rather than in spacious and hazardous brilliance. He was infinitely careful in preparation, and compared with many was inclined to be slow; but every step in every operation which I ever saw him do was completed deliberately, accurately, once for all. It led inevitably to the next step, without pause, without haste; that step completed, another followed. . . . And so when the end came, a review of the operation showed no false move, no part left incomplete, no chance of disaster; all was honest, safe, and simple; it was modest rather than brilliant. During the whole operation, Murphy talked; not wasting time, but expressing and explaining aloud the quiet, gentle, dextrous movements of his hands and purposeful working of his mind." When the operation was over he would draw his stool near to the front row of seats, cross his legs, and talk as only he was able to talk—of surgery in general, of the case in particular, of his own faults and shortcomings, of special experiments made to elucidate, and of doubtful issues. His talk was now quiet; the fervor and passion of the operation gone. Absolute truthfulness was the dominant expression of Murphy's personality. Like Lincoln, to quote Moynihan again, "he never looked at truth askance or strangely."

Editorial Articles

INSECTS AND THE DECLINE OF NATIONS

During recent years a great deal has been learned of the rôle of insects in the transmission of disease and it has been suggested more than once that the disease bearing insect has played a sinister part in the decline of nations. Malaria conveyed by mosquitoes has been given as a cause, perhaps the chief cause, of the fall of the Roman empire, as well as of the Greek republics. Sir Ronald Ross, himself the discoverer of the manner by which malaria was conveyed by a particular kind of mosquito, was the first to advance this theory several years ago. In the heyday of their greatness malaria was unknown in Greece and Rome; if it had been prevalent descriptions of it would have been handed down. The malaria bearing mosquito might have lived amongst them but as she was not the host of the parasite was harmless. It was the very successes and military power of Greece and Rome especially that brought about their fall. Expeditions into tropical countries yielded great booty but they also introduced malaria by means of the malaria infected soldiers and captives. If anopheles were present, as doubtless they were present, the disease would spread as forest fire because the soil was virgin.

There are few diseases which sap the vitality as does malaria, and according to Ross this was the cause of the decadence of Greece and Rome. Macedonia, which was abundantly fruitful in the days of Greece's prosperity, is now almost a waste land and reeking with malaria, as soldiers who served there during the war know to their cost. The Roman Campagna which was as flourishing and fruitful as Macedonia has been rendered desolate by the same insidious means. That malaria there is transmitted by mosquitoes has been proved beyond doubt. While malaria is the disease which, on account of its prevalence and devastating properties, is the most conspicuous of the insect borne diseases, there are many others which carry and transmit disease far and wide. Plague, sleeping sickness, yellow fever to wit and insects are under suspicion of being directly concerned in the transmission of other dangerous maladies. In fact, there is the closest relationship between entomology and hygiene. If the Greeks and Romans had known of the mode by which malaria is spread, it may be imagined that they would have saved their civilizations by destroying the insects. And yet their descendants, although they know, do not practice the only really effective methods of ridding a country of malaria. Instead of attempting to treat and immunize the dwellers in the Campagna by the systematic administration of quinine, the manner of procedure of the Italian physicians, it would be far wiser to take a leaf from Ross's book and drain the swamps, destroying the breeding places and abolishing mosquitoes, and with them malaria. Wherever this plan has been carried out efficiently it has been entirely successful.

The menace of insects as conveyers of disease is beginning to be realized, even when they are not infected they carry germs and dirt on their feet as the common fly carries them. The crusade here against Musca domestica has been a noteworthy forward hygienic movement and has been followed by excellent results. Rome and Greece probably declined through lack of special entomological knowledge and it might be well if all modern nations put this knowledge into practice. In certain parts of the country malaria is prevalent, swamps are numerous and mosquitoes abound. If these breeding places were drained, not only would malaria vanish, but new country for cultivation would be opened if not for this generation, for future generations. The initial cost might be great but in the end it would return exorbitant interest in health and prosperity.

THE SPECIALIST

There is much talk, which comes also now and again to the surface in print, of the evils becoming apparent in our intellectual life as a civilization due to the narrowing specialization of science and especially of medical science. Much of this criticism is void of any constructive suggestion. Educators tell us there is no more room for the introduction of liberalizing influences into medical education. Earnest workers tell us there is no time for the cultivation of those arts which broaden and humanize the intellectual life of men of science. This is heard most acutely and most insistently in medicine.

If we seek a solution for the evils of specialism in the intellectual life of modern civilization and for a moment contemplate the possibility and the desirability of checking it, we realize the necessity of caution, lest we enter a blind alley, lest we take the wrong path to a constructive idealism. We do not need less specialization, we need more of it. We need to so limit the day's work that hours of leisure are possible for a higher culture is the scheme advocated for the working man by advanced sociologists. We have cleared away the saloon in a sort

dumb instinctive wisdom as a precaution and the scheme for a better and happier social life has been launched for those who work with their hands.

But as yet no one has urged the same doctrine as the proper ideal to strive for in the problem of the alarming lack of intelligence manifest in the working man laboring in the specializations of science. To appropriate and strip of its pristine meaning an axiom of diplomacy, *divide et impera.* Put two men instead of one at the laboratory table where a biological problem, involving physicochemical research is being worked out and let each be more free to seek the rudiments of general intelligence. Of course the solution is not so crude as this, but the suggestion is sufficiently obvious. As a matter of fact modern specialism is suffering from the discomforts of infantile dentition, not from adult marasmus. Modern research is still a mere baby and while there is well justified alarm that it may get lost in the woods,

> Questa selva selvaggia ed aspra e forte
> Che nel pensier rinnova la paura,

in the entangled jungle of which Dante sung, penetrated by no beams of light from the outside after all modern specialism will grow up, it is to be hoped with some confidence, into a more intelligent and sympathetic manhood than certain dismal observers of its childhood seem disposed to prophesy.

INFANT WELFARE

No steps in the province of preventive medicine are of greater importance than the welfare of infants. A large proportion of infants die during the first year of life, a proportion much larger than should be the case, while many of those who survive are ill nourished and weak. Both the high rate of mortality and the wide incidence of malnutrition are due largely to errors in feeding. In all countries it seems that breast feeding is being practised to a less extent with, of course, correspondingly bad effects. Recently, according to the Paris correspondent of the *Medical Press and Circular,* February 20th, last, the welfare of infants has occupied the attention of the French Academy of Medicine. Professor Wallich stated that in 1921, out of 83,000 babies who were confided to the care of wet nurses or handed over to the *assistance publique,* 5,000 only were breast fed. Bottle feeding, which in 1913 was employed in only seventy-eight per cent. of children, attained to ninety-three per cent. in 1920. In the Department of the Seine ninety-eight per cent. of children are bottle fed. Professor Wallich is strongly in favor of municipal *crèches or poupounères,* where babies can be reared under strict medical supervision.

The French Academy of Medicine has also passed resolutions with regard to the status of midwives. At one time, and that only a few years ago, the professional standing and social status of midwives in France were equally low. They were somewhat of the same class as the monthly nurse immortalized by Dickens as Sairy Gamp. During the past few years there has been some improvement in both respects but there is room for considerable more. The academy desires to raise the standard of general education as well as of professional competence. With this end in view it is suggested that midwives should hold a certificate to show that they possess a fairly good general education. Moreover, that at stated intervals, after qualifying as midwives, they should attend some official obstetrical clinic for a period of ten to fifteen days. The question of infant welfare is bound up to a considerable extent with that of antenatal care and skilful midwifery, and thus it is of the first consequence that midwives should be competent. Pregnant women are being taught now how to care for themselves, or at least are afforded opportunities for such instruction, and it is impressed upon them that antenatal care is an important part of the teaching of infant welfare. But the teaching of midwifery still leaves something lacking. As great care and skill are needed in obstetrical technic as in any other surgical operation and it should be performed under favorable conditions. The point was brought out and strongly stressed in a report published by the British Ministry of Health a short time ago and measures were suggested for rendering antenatal care and the technic of midwifery effective. It was pointed out that the teaching in this branch of surgery which the medical student receives when at hospital is not nearly thorough enough, in fact, is frequently almost futile. And this is no doubt the case, to some extent, in America.

On February 7th, last, one of the foremost British authorities, Mr. H. Beckwith Whitehouse, M.S., of Birmingham, gave an address before the Ulster Medical Society in Belfast on puerperal sepsis. He stated that the occurrence of puerperal sepsis and other accidents of midwifery were largely the result of ignorance on the part of the midwife. In advocating the inspection of all hospitals and homes where midwifery was conducted Mr. Whitehouse stated that this would be welcomed by all reputable homes, and that it would put a stop to many socalled homes which were little better than private houses. The low incidence of morbidity in large hospitals as the Rotunda in Dublin was quoted. He was of the opinion that midwifery and general practice did not easily assimilate, and that the general practitioner would probably be glad to get the responsibility off

his hands and he advocated the formation of district groups in which one practitioner would do all the work in obstetrics.

In the care and management of the infant there are three periods during which skill and practical knowledge are especially required antenatal, midwifery, and during the first year of life. With regard to midwifery it seems to be the growing opinion that neither students nor midwives are instructed in a sufficiently thorough manner in the technic of obstetrics and it is in the interests of all that midwifery should be done by one skilled in the technic. And, this is of even as great importance, that the environment during midwifery should be as aseptic as possible and therefore should be done, except in particularly favorable circumstances, in hospitals equipped for the purpose. Lastly, that during the first year of life infants should be fed at the breast unless there are really sound reasons for contraindicating this natural procedure. To carry out such a scheme, it is predicated that women shall be taught antenatal care, that medical students and midwives shall be thoroughly instructed in all matters pertaining to obstetrics, that everywhere hospitals shall be provided for the reception of midwifery cases, and that a campaign of education be launched for the purpose of impressing upon women the necessity of breast feeding and managing the infant during the first year of life.

A NEW CLINIC

The suppression of bad habits and the encouragement of new ones is the foundation of all education and has been accepted and put into practice in a more or less desultory fashion in connection with physical education in schools. Such school work, while invaluable, comes some five or six years late, and, hence, hardly is comparable with habit formation in mental studies.

Some attempt at changing habits is carried on in the practices of most physicians, for "go and sin no more" (along the line of sinning for which the patient applies for aid) is uttered or implied in all good medical advice. Again, however, the instruction may be late for the formation of healthier habits. The most appropriate time for efforts at making healthy living spontaneous comes in infancy and earlier childhood. It must here come, however, through the guidance of parent or nurse, but with such help it is amazing what can be accomplished.

Every clinic is, to some extent, a habit clinic. It is usually a bad habit that takes man, woman, or child, to a clinic. Every children's clinic has become more and more deserving of the name because habits are being more and more examined into. Now the name itself has been adopted, and we have, if not a new clinic, at least a clinic with a new name—the Habit Clinic. This originated, we believe, down east,—at any rate they are being established throughout the state of Massachusetts. The function of these clinics is to study and treat undesirable habits and personality defects in children of preschool age, and might possibly be more specifically called Bad Habit Clinics, but their object is, of course, to establish good habits.

The clinic is, as we have suggested, not new, but there is something more revolutionary in the name than may seem at first glance, for we have got away, in terms at least, from anything that smacks of medicine in the older and narrower sense.

We wish that there might be other changes of nomenclature in line with this. In particular there comes to mind the use of the word school nurse. The word nurse always suggests sickness and the sickroom. We might do worse if we used the term "school health worker." When the nurse had for her work the treatment of skin diseases in schools, she might well have deserved the name which still clings, but as that work is, or should be, relegated to the home, it is hardly appropriate to call her a nurse. Also in school work the words "physical examination" might well be substituted for the phrase "medical examination of school children."

All the world seems to be a clinic nowadays, and there are doctors galore for mind and body. It might help a little, however, to let the sickness side of the clinic fade apace and give it more the atmosphere of positive health. A habit clinic is a step on the way to what may before long be called a health clinic. Maybe some day we shall even graduate doctors of hygiene instead of, or as well as, doctors of medicine. The doctor of public health is, of course, a pioneer figure in the new highway to health.

COMMON COLDS

That common colds and associated infections are among the chief sources of loss of time in large business and industrial establishments has been shown in a study made recently by the Metropolitan Life Insurance Company. This study revealed that these disabling affections occurred at a rate of 420.7 per 1,000 employees for the year. The average days of disability for this illness per person on the payroll for the year was 0.9, and the average days per case were 2.2. In all, there were 6,233 days lost in the year from these conditions, which included head colds, acute bronchitis and tracheitis.

It was found that these infections of the upper respiratory tract have two periods of maximum incidence: the first, following the advent of cold

weather in the late summer and early autumn; the second, occurring during the following January or February, when the coldest weather of the winter is likely to prevail. The data showed also a distinct relationship between respiratory infections and changes in the weather. It was found that the number of common colds varies with the rise and fall of the weekly mean temperature. A drop of ten degrees carried with it an increase of eighteen colds a week in the group studied, consisting of 6,770 people. However, other weather elements, such as mean relative humidity and total precipitation seem to have only a slight influence upon this incidence.

"We are confronted with two important factors," the report goes on to say, "in connection with the prevention of the infections of the respiratory tract. There is, first, the annual downward swing of temperature, and, second, the possible relationship of the minor infections which arise in the fall and early winter to those occurring later on." The first, or ecological factor, can be compensated to a degree by proper ventilation, clothing, and heating of buildings and transportation facilities. The second factor requires further study, perhaps leading to important preventive measures.

TEACHING BY FICTION

One of the contradictions of the the human mind is its willingness to accept as truth almost any kind of fiction and its rebellious antagonism to any dose of truth, no matter how minute its size. Truth must be coated with the sugar of fiction to gain any widespread acceptance. *The Man Without a Country* has made more converts to patriotism than the ringing truths of the Declaration of Independence and in its day *Slovenly Peter* made more faces shine than the nurses teaching that "it is better to be clean than to be happy."

All of this by way of saying that the fiction route is the easiest approach to the average intellect and to urge the more general adoption of this avenue of attack by social hygienists. The *Nation's Health* for September last contains a notable example of what may be done in this way. Rucker, who by the way wrote *The Sword of Damocles,* one of the earliest and most successful antivenereal fiction preachments, in *The Fourth Man* strikes from another angle. He tells the tragedy of the wife of the philanderer. A bishop, a judge and two business men engage in conversation about the death of the wife of one of their acquaintances, a popular, hale fellow of the too well met type. It develops that he probably infected his wife, thereby causing her death. The fourth man asserts that it was murder or at least manslaughter and in the argument which follows, drags the lapses from virtue of the other business men, the judge and himself out into the light with almost malicious insistence and startling consequences. The psychology of the bishop and the judge is truth itself and the sequence of the story is accurate.

There is a mighty lesson in this short virile story and the barb of the parable is driven home and clinched in the mind of the reader in no uncertain manner. Its similitude of actuality is so perfect that it conveys the impression of absolute truth, yet it must be fiction pure and simple, since probably no group of men could ever be forced to make such pitilessly honest confessions.

This is a type of public health teaching which is to be commended and more generally employed and it is to be hoped that *The Nation's Health* and the author will follow up this very profitable and worthwhile method. After all, the way to teach humans is to be human.

CHILD WELFARE

Among the problems of child welfare dealt with at the meeting of the International Association for the Promotion of Child Welfare, held in Geneva last July, were the repatriation of juvenile delinquents, the establishment of infant rearing centres, improvement of day nurseries, and school hygiene. The convention for the repatriation of destitute or juvenile delinquents provided in its draft for the repatriation of minors of foreign nationality by the contracting States, especially of those minors without means of protection or support, and escaped delinquents, who had been removed from the authority of their parents or guardians. The minor must be handed over by virtue of a decision given by the authorities of his native State.

The following is a summary of the recommendations passed at the meeting in regard to the three other subjects:

Infant rearing centres: It was recommended that, because of the difficulty of supervising the care of infants placed out promiscuously, rearing centres be established under the direction of qualified medical officers.

Improvement of day nurseries: 1. All crèches should be under the direction of a physician. 2. Separate rooms should be used for the cradles, the linen, disinfecting purposes, and isolation of patients. 3. They should be open to the pupils of puericulture schools.

School hygiene: Close cooperation should exist among the teacher, the school physician and the school nurse. The teacher should be acquainted with the fundamental principles of hygiene. Each child should be submitted to an annual examination, of which a record should be kept, and proper action taken as indicated by these examinations. The attention of the public authorities was called, from the point of view of prophylaxis, to the importance of the medical examination from the viewpoint of the teacher, and to the value of dental hygiene.

CHILD MORTALITY

In a recent report the Department of Health of New York City gives statistics on the unprecedented decrease in mortality among children under five years of age in this city during the first nine months of the year. Among children under one year of age, there were 870 less deaths than in the corresponding period of 1922; the decrease in mortality among those one year old was 1,137, and among those between two and five, 663, making a total of 2,670 lives saved. This remarkable decrease was probably due to the lessened prevalence of the four chief infectious diseases of childhood—measles, scarlet fever, whooping cough, and diphtheria. Compared with prevalence in 1922, measles showed a decrease of 747 deaths, scarlet fever a decrease of 93 deaths, whooping cough a decrease of 53 deaths, and diphtheria and croup a decrease of 307 deaths, making a total decrease of 1,197 deaths. Coincident with these decreases, there was also a marked decrease in mortality among children from respiratory diseases. The infant mortality which, the report states, is estimated upon the number of deaths of children under one year of age per 1,000 births reported, was 68 during the nine months, as compared with 76, a decrease of 8 deaths per 1,000 children born, and as the number of births reported during the year will approximate 130,000, we can look forward to a probable saving of 1,040 lives in this age group.

Although we find this marked decline in mortality among children, there was a considerable increase in deaths caused by diseases affecting middle and advanced age. Influenza showed an increase over 1922 of 280 deaths, organic heart disease of 819 deaths, chronic Bright's disease of 184 deaths, and cancer of 373 deaths. Accidental deaths increased 345. The death rate from all causes at all ages was 12.11 as compared with 12.19 for the same period of 1922, a decrease of .08 of a point.

CHILD HEALTH

In keeping with the present day feeling that health work should be preventive rather than remedial was the spirit prompting the generous donation set aside some time ago by the Commonwealth Fund to finance a complete demonstration of child health and general welfare in certain chosen cities of the United States. It was decided that these exhibits would be more forceful if held successively rather than simultaneously. The demonstration is to be administered through the American Child Health Association.

The plan includes in brief the following specifications: 1. Three demonstrations to be conducted in the same number of cities in different parts of the United States, each exhibition to include in a single unit complete educational and preventive child health activities covering the period from the prenatal life through the school life. 2. The specific form of the activities undertaken to be modified as may be necessary to insure the flexibility required for adaptation to local conditions and needs. 3. Primary consideration to be given to the welfare of the children reached in the course of the work, these children to be regarded in the light of human beings to be helped, not of subjects for experimentation. 4. The demonstrations to be conducted over five year periods in such a manner as to effect, among others, the following results: a, the indication of methods for the protection and improvement of child health; b, development of the work in cooperation with existing health agencies in such a way that a permanent and practicable plan of operations may be available and, if possible, assured after the close of the exhibitions; c, to avoid developing the work to a point where the *per capita* cost shall exceed the power of the local community to carry it.

Such a plan, if properly administered and promulgated, should be productive of vast benefits in health education, not only to the children themselves, but to parents in assisting them to give their children the proper start in life.

TYPHOID FEVER

A summary of typhoid fever conditions in New York City during the last quarter of 1923 states that 235 cases were reported as compared with 244 for the corresponding period in 1922. In seventy-four per cent. of these cases, the diagnosis was confirmed by laboratory findings. In the three months under discussion, sixty-six cases were traced to out of town infection, as compared with forty-eight in 1922. Eleven cases in Manhattan were traced to a previously undiscovered carrier working as a food handler. Four cases were traced to a child who returned ill from an out of town visit. Five cases in the Bronx were traced to a father who evidently had become infected while working as a laborer in sewer construction. Seven cases in Brooklyn were traced to two carriers in the family of a neighbor. Thus twenty-seven cases were due to four sources of infection. This summary should be of value to physicians in that it indicates that, although typhoid fever in New York City has been reduced to a relatively minor communicable disease, so that many doctors in private practice rarely see a case, nevertheless it is a disease to be seriously reckoned with as long as unrecognized carriers live among us, and many who travel fail to protect themselves and others by immunization.

News Items

Lebanon Hospital Appointments.—At a regular meeting of the board of directors held on March 16, 1924, the following appointments were passed: Attending surgeon to Lebanon Hospital, Dr. L. Miller Kahn; alumni privileges of Lebanon Hospital, Dr. Herman Frosch and Dr. Charles Weisberg.

To Honor Dr. Banting.—The Sulgrave Institution will give a dinner at the Biltmore Hotel, Wednesday evening, April 9, in honor of Dr. Frederick Grant Banting, "in recognition of his service to humanity through the discovery of insulin and as a tribute to the Canadian people who share this distinction with him."

A Critical Study of Common Methods of Fixation.—Dr. Elmel P. Weigel, assistant professor of orthopedic surgery, New York Post-Graduate Medical School and Hospital, delivered an address on Common Methods of Fixation, before the Section in Surgery of the Buffalo Academy of Medicine, Wednesday evening, March 5th, in which he called attention to the fact that recent military experience had popularized methods of treatment which were not as suitable for use in civilian practice as in war work. He believed that for most work the proper use of well made plaster was probably the most satisfactory method of applying fixation. The lecture was well illustrated by lantern slides and moving pictures.

Change of Address.—Dr. L. Merrill Henikoff announces the removal of his office and residence to the Hotel Bismark (Randolph), Chicago.

West Side Hospital and Dispensary Staff Holds Meeting.—The regular monthly meeting of the medical and surgical staff of the West Side Hospital and Dispensary was held on the evening of March 31st. Dr. Herman Goodman presented a paper on cutaneous and other manifestations of syphilis and Dr. James H. Heacock demonstrated a modified technic for intravenous medication.

Plaut Research Fund.—Dr. Edward Plaut, president of Lehn & Fink, Inc., New York, has presented the Harriman Research Laboratory with the sum of $3,000 for the year 1924, to be known as the Plaut Research Fund for Studies in Internal Medicine. This fund is to aid in the investigation of the effects of certain therapeutic agents, especially the endocrine glands. Dr. K. G. Falk has been placed in charge of this work by Dr. W. G. Lyle, director of the Harriman Research Laboratory.

United States to Participate in League of Nations Conferences on Opium Traffic. — According to cable dispatches from Geneva the United States will participate as a prominent member in the League of Nations conferences on opium traffic, which will be held in the near future. The next conference will include countries having Far Eastern possessions where opium is used and the object will be to bring about limitation, if not complete suppression, of opium consumption in the Far East. China, India, Japan, Portugal, Siam, Belgium and Italy will be invited by the council's decision to send representatives to collaborate with the committee in arranging the program of the conference.

Annual Reunion of the "Blizzard Class."—The graduates of Bellevue Hospital Medical College of 1888, known as the "Blizzard Class," will hold their annual reunion and dinner on Saturday, April 12th, at 6:30 p. m. They are to be the guests of Dr. D. Hunter McAlpin at the McAlpin Hotel, West Thirty-fourth Street, New York. If any member of the class did not receive an invitation, it was because his address was unknown. Should such a one desire to participate in the reunion, he will please notify the acting secretary, Dr. S. Adolphus Knopf, 16 West Ninety-fifth Street, New York.

Personal.—Dr. H. Douglas Singer has succeeded Dr. Ralph P. Truitt as medical director of the Illinois Society for Mental Hygiene.

Dr. Samuel Leopold is director of a mental hygiene clinic for children of preschool age, established recently in Philadelphia.

Dr. A. J. Ostheimer, of Philadelphia, has been appointed director of the recently reorganized mental hygiene division of the Public Charities Association of Pennsylvania.

Dr. David E. Hoag has been appointed clinical professor of nervous and mental diseases at the New York Polyclinic Medical School and Hospital.

Dr. Heinrich Finkelstein, professor of pediatrics in the University of Berlin, Germany, arrived in New York on March 10th, He is making a lecture tour of the United States.

Dr. Harlow Brooks was elected president of the American College of Physicians at the annual meeting held in St. Louis, Mo., February 18th to 23d.

Medical Societies to Meet in April.—The following medical societies will meet in annual session during the month of April:

Medical Association of the State of Alabama, Montgomery, April 15th to 18th, Dr. D. L. Cannon, secretary.

American Association of Anatomists, Buffalo, N. Y., April 16th to 19th; Dr. Lewis H. Weed, of Baltimore, secretary.

American Surgical Association, Baltimore, April 17th to 19th; Dr. Robert B. Greenough, of Boston, secretary.

Medical Society of Hawaii, Honolulu, April 26th to 28th; Dr. W. K. Chang, Honolulu, secretary.

Louisiana State Medical Society, Opelousas, April 21st to 24th; Dr. P. T. Talbot, secretary.

Medical and Chirurgical Faculty of Maryland, Baltimore, April 22d to 24th; Dr. J. A. Chatard, Baltimore, secretary.

Medical Society of the State of New York, Rochester, April 22d and 23d; Dr. Edward L. Hunt, New York, secretary.

Medical Society of the State of North Carolina, Raleigh, April 15th to 17th; Dr. L. B. McBrayer, Sanatorium, secretary.

South Carolina Medical Association, Orangeburg, April 15th to 17th; Dr. Edgar A. Hines, Seneca, secretary.

Tennessee State Medical Association, Knoxville, April 8th to 10th; Dr. J. F. Gallagher, Nashville, secretary.

Western Electrotherapeutic Association, Kansas City, Mo., April 17th and 18th; Dr. Charles Wood Fassett, secretary.

Decrease in Cost of Caring for Insane.—The cost of caring for the State's insane in the thirteen State hospitals, in which were housed 7,281 patients in excess of normal capacity, showed a decrease of $1,660,182.72 for the fiscal year 1923, according to the report of the State Hospital Commission. The daily average number of patients cared for during the year was 37,936 and the general average per capital cost of maintenance was $327.86, as compared with $333.07 in 1922 and $377.54 in 1921. Total expenditures for 1923 amounted to $14,386,834.44.

Campaign to Raise $2,000,000 for Beth Israel Hospital.—The directors of the Beth Israel Hospital are preparing to start a campaign to raise the additional $2,000,000 needed to meet the cost of a new $4,000,000 building, nearing completion in Livingston Place, between Sixteenth and Seventeenth Streets. The hospital is now situated at Jefferson and Cherry Streets. In the new building, as now, the Jewish dietary laws will be adhered to strictly. It will contain five hundred beds. Each patient will have a room. The building will include a synagogue. A microphone will convey the services to bedridden patients. In the children's ward glass partitions will be erected so that mothers who cannot take their children in their arms may look upon them without danger of contracting disease. Sleeping rooms will be provided for mothers of newborn infants. The hospital is to be conducted on the lacto-vegetarian basis, no meats being used.

Gifts and Bequests to Hospitals.—Lucius N. Littauer, former member of Congress and head of the Littauer Glove Corporation of Gloversville and New York, announced plans for the building of a $300,000 addition to the Nathan Littauer Hospital at Gloversville, N. Y., which, with the Harriet Littauer Home for Nurses, he established many years ago as a memorial to his father and mother.

The will of the late Catherine B. Guernsey contains a bequest of $7,550 with which to endow a room of Hahnemann Hospital in memory of her husband, Dr. William Noah Guernsey.

The following institutions, among many others, receive $10,000 each under the will of the late Thomas D. Hurst: St. John's Hospital, Home of St. Giles the Cripple, New York Society for the Relief of the Ruptured and Crippled, Servants of Relief for Incurable Cancer, State Charities Aid Association.

A Course of Lectures on Medical Hydrology.—The University of London board to promote the extension of university teaching announces a course of lectures on Medical Hydrology, supplemented by demonstrations in London and by a study tour to Bath and Cheltenham. The course is being arranged by the board in cooperation with the committee for the promotion of teaching of medical hydrology (representing the International Society of Medical Hydrology and the Section of Balneology and Climatology of the Royal Society of Medicine). It will take place at the University in the week commencing May 5, 1924. The lectures will comprise one or more physiological discourses on the action of natural remedies, and systematic lectures on the treatment of incipient and chronic disease by means of waters and baths. The fee for the course is three guineas. Particulars may be obtained on application to Hon. Sec., Hydrology Teaching Committee, c/o University Extension Department, University of London, Imperial Institute Road, South Kensington, S.W.7. A complete programme will be issued in due course.

Philadelphia Physician Reports Health Conditions Improving in Austria.—Dr. Mary Griscom, a well known Philadelphia physician, who has spent the last nine months in relief work for the American Friends Service Committee in Austria, has just returned to America. Dr. Griscom had charge of the antituberculosis work for the Service Committee in accordance with a program supported by that organization and the Austrian Department of Health in a fight against the menacing plague which threatened the lives of tens of thousands of their children. Dr. Griscom has been associated with Dr. von Pirquet in Vienna. Teachers are trained in antituberculosis and child care methods in von Pirquet's clinic, then are sent out into the remote districts of the provinces to give instruction in the homes and schools. The Austrian Government is fast regaining her ability to cope with her gigantic health problems, says Dr. Griscom. The Friends Service has been able to save the lives and health of hundreds of children by making it possible for them to have medical attention and suitable food.

Foreign Correspondence.

LONDON LETTER

(*From our own correspondent*)

London, *February 17, 1924.*

CHEAPER INSULIN

Investigations have been made and are still going on at the Biochemical Department of the Bland-Sutton Institute of Pathology, Middlesex Hospital, London, with a view to determining whether any simplification could be effected in the method now in general use for the preparation of insulin. These investigations have been conducted by Mr. E. C. Dodds, chemical pathologist to the Middlesex Hospital, and Mr. F. Dickens, assistant in biochemistry department, Middlesex Hospital, and described in the *Lancet,* February 16th last. There is no space here to enter into the details of the method; suffice it to say that the method opens the possibility for a substantial reduction in the price of insulin. It appears that the process of manufacture can be hastened and perhaps the use of alcohol dispensed with in its preparation. This would render the manufacture of the remedy comparatively inexpensive. It may be said that insulin prepared by the water extraction process described in the *Lancet* has been employed clinically on four human subjects and up to the present has been satisfactory. As said before investigations are being continued. If a cheap means of making insulin can be discovered no one suffering from diabetes will be compelled to forego a mode of treatment which, on the whole, has been remarkably successful and has supplied one of the brightest pages in the history of therapeutic medicine. If, moreover, a preparation can be prepared which is effective by oral administration a still greater triumph will have been won. It seems that we are traveling in that direction.

FELLOWSHIP OF MEDICINE AND POSTGRADUATE MEDICAL ASSOCIATION, LONDON

Special courses in children's diseases were given at the Royal Waterloo Hospital, London, from March 17 to April 5, 1924. Subjects were dealt with by lecture demonstrations, ward work, outpatient clinics and operations by various members of the staff.

EPIDEMIC OF INFLUENZA

The epidemic of influenza which up to the present time has been of a comparatively mild type is increasing both in prevalence and virulence. In London last week the death rate reached twenty in a thousand; the average for the whole year 1923 was 11.2. This rise is entirely due to influenza, the most deadly disease known in Great Britain and probably in any country. But the deaths ascribed to influenza, although large, represent but a tithe of the total mortality. In order better to understand what the menace of influenza really is it is necessary to watch the death roll from bronchitis, bronchopneumonia, and heart disease and the modifications of pneumonia. It is not influenza in itself that is so deadly but its complications, and the sapping of vitality which renders its victims susceptible to other infections or diseases. The complications with the streptococci, the most dreaded of all, have not been very evident as yet, but unfortunately these complications generally occur when an epidemic has been under way for a considerable time. In Leeds, the largest manufacturing town of Yorkshire, the influenza scourge is becoming somewhat alarming. There has been a marked increase in the number of deaths at all ages from influenzal pneumonia and pneumonia, while during the past two weeks the infantile death rate has gone up by leaps and bounds. The deaths have been due mainly to influenza, whooping cough and bronchopneumonia. The number of infants suffering from the last mentioned complaint is very large. In other districts of Yorkshire influenza is very prevalent.

STREET NOISES IN LONDON

An invalid lying in a London nursing home writes to a daily journal giving his daily street noise chart: 9 to 11 a. m., organ recital, gay, topical, damnable, favorite tune, *On the Back Porch;* 11 to 1.30, drum and fife band, melodies unrecognizable; 2 to 3 p. m., brass band, semireligious, also return of organ, sudden arrival of another organ; 3 to 5 p. m., distant organs and bands and near harmonium, vocalists; 7 to 10 p. m., wireless, loud speaker, brass bands, drum and fife band, harmonium, organs, grand chorus of motor horns. When the invalid gets well and goes out into the world he discovers that it is not legal for him to whistle for a taxicab or to drive a motor car with a noisy exhaust.

BRITISH EMPIRE CANCER CAMPAIGN

The British campaign against cancer, launched a few months ago, is proceeding apace. An advisory committee has been appointed following a conference between representatives of the Royal Society, the Medical Research Council and the British Empire Cancer Campaign, to administer the funds of the campaign. The following have consented to serve on the Committee: Sir John Bland-Sutton, president of the Royal College of Surgeons; Dr. H. H. Dale, C.B.E., F.R.S., head of the department of biochemistry and pharmacology under the Medical Research Council; Sir Richard Garton, G.B.E.; Dr. F. Gowland Hopkins, F.R.S.; Sir William Dunn, professor of biochemistry in the University of Cambridge; Dr. Robert Knox, director of electrical and radiotherapeutical department, Cancer Hospital; Sir William Leishman, K.C.B., K.C.M.G., F.R.S., director general, Army Medical Service; Professor C. T. Martin, C.M.G., F.R.S., director of the Lister Institute of Preventive Medicine; Dr. Robert Muir, F.R.S., professor of pathology in the University of Glasgow; Sir Humphry Rolleston, K.C.B., president of the Royal College of Physicians. The formation of this committee, half the members of which are appointed jointly by the Royal Society and the Medical Research Council, marks a long forward step in the process of completing the main organization of the British Empire Cancer Campaign, whose appeal for funds to endow and subsidize research on the causes and treatment of cancer has been undertaken by the British Red Cross Society. Since the appeal was first made in May last it has met with a fair measure of success, and subscriptions received both from home and Empire sources already amount to more than £70,000. Though much more money is needed for the investigation of cancer, a group of

morbid conditions rather than a single disease, is so complicated and must be so widespread that a million pounds might readily be spent without suspicion of waste. It is not intended to hold up the work until any specified total sum has been subscribed.

The British Empire Cancer Campaign proposes to begin by applying its funds to the fostering of research as they are received and at the earliest possible moment. It is here that the advisory committee will have a prominent part to play. Its functions will be to devise schemes of research, to advise and report upon all questions relating to research, including the allotment and application of funds. It will also be closely concerned in maintaining communication between research workers all over the world, making their results and discoveries mutually available, and in keeping the public informed of the nature of the problems to be solved and the progress made towards their solution. The distinction and knowledge of the members of the committee are in themselves a guarantee that no branch of research will be neglected, and that money devoted to encouraging any of them will be spent wisely and well. The aim of the British Cancer Campaign is to co-ordinate and combine all research work on cancer, to prevent overlapping, and to fill up gaps where now there are few or no workers.

LATIN AMERICA LETTER

(From our own correspondent)

BALBOA, CANAL ZONE, *February 1, 1924.*

PANAMA'S SPOKESMEN NAMED

President Porras has announced by Executive Decree that the delegates from Panama to the Conference of the Maritime Quarantine Authorities of the West Coast of South America will be Dr. Augusto S. Boyd, chief surgeon of Santo Tomás Hospital, and Dr. William Colby Rucker, chief quarantine officer. Dr. Boyd, who is also the president of the Junta de Sanidad Nacional, is the chairman of the Panaman Delegation and Dr. Rucker is the secretary-general of the conference.

Dr. Sebastián Lorente, accompanied by his wife and Dr. Carlos Enrique Paz Soldan will arrive at Balboa on the S. S. *Santa Elisa* of the Grace Line on February 18th as the delegation from Peru. Dr. Lorente is the national director of health of Peru and Dr. Paz Soldan is professor of hygiene in the University of Lima and the editor of *La Medica Reforma*. The Peruvian delegation will bring as its secretary, Mr. Humberto Rebagliati, who will be accompanied by his wife and sister-in-law, Senorita Cortez. Unfortunately, Dr. R. Corbalón Melgarejo, director general of health of Chile, has been prevented by sickness from attending the conference, but Chile will be represented by Dr. Tomás Aravena, chief quarantine officer of Arica, Chile.

Surgeon S. B. Grubbs, U.S.P.H.S., former chief quarantine officer of the Panama Canal and health officer of the Port of New York, will leave New York on February 6th and after spending a week in Jamaica will arrive for the conference on February 21st. Assistant Surgeon General John D. Long, U.S.P.H.S. who is in charge of the maritime quarantines of the United States, will arrive on the S. S. *William C. Gorgas* on February 23rd. Doctor Long comes as the delegate of the Pan-American Sanitary Office and is expected to be one of the leading figures of the conference. On the same day, Dr. Carlos A. Miño, deputy national health commissioner of Ecuador and health officer of Pinchinchi and Quito will arrive. The secretary of the Ecuadorian delegation is Mr. Saens de Tejado.

The National Theatre has been selected as the place of meeting for the conference. Dinners and luncheons will be given for the delegates and observers by the Panaman Government, the Chamber of Commerce, the Herrick Clinic, the Panama Agencies, the Rotary Clubs of Colon and Panama and the Isthmian Canal Medical Association. The program will include formal discussions by the delegates and demonstrations at Santo Tomás Hospital, Ancon Hospital, the Panama Hospital, the Board of Health Laboratory, the Palo Seco Leprosarium and the Miraflores Water Purification Plant. At Colon and Panama there will be demonstrations of municipal sanitation in all its phases. Visits will be paid to the gigantic refrigeration plant at Mt. Hope and the Mindi Dairy Farms. An interesting demonstration will be the fumigation of ships with cyanogen chloride.

ROTARY CLUBS GET BEHIND HEALTH MOVEMENT

The Rotary Clubs of Panama and Colon have included in their annual programs the stimulation of national preventive medicine as a governmental function. These plans include the extension of the dispensary system in the interior so that it will include prevention as well as cure; the attack upon tuberculosis, hookworm disease and malaria; child hygiene, particularly with relation to the spread of public health teaching in the public schools; and the utilization of the forces of the Rockefeller Foundation to the fullest extent. Panama is developing a strong sense of sanitary consciousness; two physicians have been recently sent to the United States to be educated in public health work; the citizens of the capital and of Colon are pushing their demand for a greater sanitary activity on the part of the national and local governments; in fact a genuine public health awakening is being fostered and stimulated by the Rotary Clubs as the representatives of the most wide-awake portion of the business population.

PSYCHOSES OF THE ISTHMUS OF PANAMA

Dr. Louis Wender, who for several years was the superintendent of the Corozal Hospital for the Insane, in an article appearing in the October, 1923, issue of the *American Journal of Psychiatry,* under the caption, Types of Psychoses Prevalent on the Isthmus of Panama, presents a statistical study based upon two years' admissions to that institution, which has excited considerable interest here. He notes the predominance of dementia precox among the white population, the disproportion of neurosyphilis between colored females and white males, and the preponderance of cerebral syphilis over paresis among colored patients. The absence of psychoses associated with pellagra among Panamanians which he notes may be explained by the constant inclusion of beans in their dietary. The relative rarity of manic depressive psychoses among colored West Indians of which he speaks is in accordance with the observations made by other physicians.

Book Reviews

SYPHILIS AND UROLOGY

Genitourinary Diseases and Syphilis. By HENRY H. MORTON, M.D., F.A.C.S., Professor of Genitourinary Diseases and Syphilis, Long Island College Hospital, etc. Fifth Edition. Revised and Enlarged. With 328 Illustrations and 38 Full Page Colored Plates. New York: Physicians' and Surgeons' Book Company, 1924.

The fifth edition of Morton's deservedly popular work appears from the press bigger and better than its predecessors. Dr. Morton has called to his aid a number of his colleagues on the faculty of the Long Island Medical College, who have written special chapters on selected topics. This volume represents the most recent thought in urology and syphilis, though we observe a tendency to overlook the finer details in diagnosis and therapy, many of which are of great importance to the practitioner brought face to face with the actual problem of making a diagnosis or administering treatment.

Morton's reputation as a urologist of ability and skill is well known. His teachings, as exemplified in this work, are orthodoxly conservative, yet modern in every respect. The student or practising physician, seeking information on the diseases of the urinary tract or on syphilis, can depend on this volume as a safe and trustworthy guide. It is written in an interesting style, the printing and illustrations are excellent, and the subject is well covered in every branch. On the whole, Dr. Morton has made an unusually welcome contribution to the American literature on urology and syphilis.

LABORATORY DIAGNOSIS OF SYPHILIS

Laboratory Diagnosis of Syphilis. A Manual for Students and Physicians. By HIDEYO NOGUCHI, M.D., M.S., Ph.D., D.Sc. With Fifty-nine Illustrations, of which Thirteen are in Color. New York: Paul B. Hoeber, Inc., 1923.

It goes without saying that the subject of this volume would be treated adequately by so eminent a serologist as Noguchi, and the reader will not be disappointed in this expectation. Step by step the author proceeds by easy stages through the various laboratory procedures which have been developed around the diagnosis of syphilis, beginning with a careful study of serum hemolysis and closing with a detailed account of the methods for the detection and study of the treponema pallidum.

The author has devoted considerable attention to the microscopic demonstration of the pallidum, and besides enumerating the standard procedures, he has described in detail the new Tilden method, which makes it possible to stain the organism with the ordinary basic aniline dyes, as well as by silver impregnation, or to examine them unstained but well preserved by darkfield illumination.

Noguchi believes that none of the many modifications in technic in the Wassermann reaction which have been proposed, has changed fundamentally the methods already generally recognized. He discusses the steps that have been taken to "standardize" the reaction, but feels that no amount of accuracy in complement, antigen or other factors will be of any value so long as the amboceptor is not quantitatively adjustable. The chapter on the luetin reaction has been considerably abbreviated, but the author has not changed his earlier views regarding its diagnostic value in certain chronic cases in which the Wassermann test gives an indecisive result.

The author and publisher have combined to produce a most attractive and useful work which can be commended as authoritative and dependable.

SURGICAL UROLOGY

An Introduction to Surgical Urology. By WILLIAM KNOX IRWIN, M.D. Aberd., F. R. C. S. Edin. New York: William Wood and Company, 1924.

The author has aimed to encompass within a small volume the main features involved in the pathology, diagnosis, and treatment of diseases of the genitourinary system. The two first chapters are devoted to a consideration of the anatomy and congenital abnormalities of the urinary tract. These are followed by chapters dealing with frequent micturition, incontinence of urine, difficult micturition, retention of urine, genitourinary pain, hematuria and pyuria, the last chapter being devoted to the senile and cancerous prostate.

Considerable useful information has been condensed within a small space, it is true, but it is doubtful whether the result has justified the effort. As an aid to the medical student in passing examinations, the volume can be said to have much value; perhaps the general practitioner will likewise find it a useful addition to his working library; but there does not seem to be any particular justification for this brief résumé of so important a subject when there are so many good textbooks which deal with it more fully and comprehensively. There are no illustrations and no bibliography; the book is well written and neatly printed.

PRURITUS OF PERINEAL REGION

Pruritus of the Perineum. Pruritus Ani, Vulvæ and Scroti. By JOSEPH FRANKLIN MONTAGUE, M.D., of the Rectal Clinic, University and Bellevue Medical College. Foreword by GEORGE DAVID STEWART, M.D. With thirty-seven illustrations. New York: Paul B. Hoeber, Inc., 1924. Pp. 181.

Based on eight years of observation and experimentation in his special subject, the author has written a most interesting and instructive monograph. His writing, as he states, is not merely a compilation of the work of others, but represents an analysis of other opinions and gives an explanatory theory of his own. The theory of infection by streptococcus fecalis is vigorously assailed and an unusual amount of bacteriological work is offered to refute it. Not only does the author show an intimate knowledge of bacteriological methods but writes in a convincing way on anatomy, physiology and pharmacology.

He divides the subject of pruritus of the perineal region (including anus, vulva and scrotum) into direct and indirect pruritus. Direct pruritus, which he terms pruritus ani, is due, he says, to direct irritation of the peripheral nerve endings in the pruritic zone. Indirect pruritus, on the other hand, which he terms anal pruritus, is due to a misreference in sensation resulting from a transference of an irritable stimulus from visceral afferent nerves to normal

somatic afferent nerve channels or pathways. This is analogous to misreference of pain, but is not a true reflex action. The fact that such a misreference of sensation indicates pathological changes elsewhere than in the area of apparent disturbance, is, he says, of outstanding clinical importance. As a symptom of visceral disease or derangement he considers that its value cannot be overestimated. The various methods of local treatment are described though too little importance is given to x ray therapy, at least as a palliative measure.

The book is well illustrated by photomicrographs of histological and bacteriological preparations, by clinical photography, charts and representations of instruments and various operative procedures. The work of the publisher regarding the paper, print, illustrations, and general appearance of the book is unusually good. A bibliography with 230 references is appended.

ACUTE DISEASES OF ABDOMEN

Diagnosis and Treatment of Acute Abdominal Diseases. Second Edition. By Joseph E. Adams. New York: William Wood & Co., 1923.

In this book Adams describes the acute diseases and injuries to which the abdomen and its contents are liable, treating these conditions from the point of view of both physician and surgeon. The author utilizes his great experience in determining the best method of treatment. In making a diagnosis Adams lays great stress on taking a careful history. He says:

"The importance of taking a careful and complete history in every case of acute abdominal disease can hardly be overestimated; the information gained thereby is at least equal to that derived from the physical examination of the patient, and in many cases it is of greater value. Many correct diagnoses can be made from the history alone; the majority of diagnostic errors are due to carelessness in history taking. Consider, for example, the following case:

"A man, aged eighteen, was brought up to hospital with a history of a severe attack of pain in the right iliac fossa of eight hours' duration; he had vomited twice at the onset. On inquiry it was discovered that he had been laid up previously with similar attacks of rightsided abdominal pain. His temperature was 101.2°, pulse 120, respiration 28; his tongue was slightly furred and his expression anxious. There was definite tenderness over the right iliac fossa, most intense in the vicinity of McBurney's point, and associated with local macular rigidity.

"The obvious diagnosis was made and immediate operation advised. A perfectly healthy appendix was discovered. A subsequent x ray examination revealed a calculus in the pelvis of the right kidney. Then, and only then, was elicited the fact that two of the previous attacks of pain had been associated with the passage of smoky urine, and that the pain of the earlier attacks had been definitely lumbar in origin; information which, obtained in the first instance, would have saved the man an entirely unnecessary operation."

Pain is another very important symptom helpful in establishing a diagnosis. Adams details several varieties of pain with the following words:

"Peristaltic pain, or colic, is associated with violent intestinal peristalsis, whether due to organic intestinal obstruction or not. It is characterized by its paroxysmal nature and usually by its severity. Between bouts of agonizing, griping pain, the patient may be more or less comfortable, even entirely free from pain. Oddly enough gastric peristalsis, however vigorous, is almost invariably painless. The pain of peritonitis is constant; but there may, of course, be a superadded peristaltic pain evidenced by exacerbations of griping. The pain due to an abscess in the abdomen, as elsewhere, is often described as throbbing; and the pains associated with gallstones are sometimes said to be stabbing pains, i. e., shooting straight through from the front to the back, as contrasted with renal pain which passes from back to front round the body."

Everything pertaining to diagnosis and treatment is described with great detail. The book can be highly recommended as a useful addition to the practitioner's library.

THERAPEUTIC TECHNIC

Therapeutische Technik für die ärztliche Praxis. Ein Handbuch für Arzte und Studierende. Bearbeitet von Prof. Dr. S. Bettmann in Heidelberg; Geheimrat Prof. Dr. J. Boas in Berlin; Dozent Dr. A. Fernau in Wien; Geheimrat Prof. Dr. E. P. Friedrich (Kiel) in Friedrischsroda unter Mitwirkung von Dr. G. Albanus in Hamburg; Prof. Dr. H. Gocht in Berlin; Geheimrat Prof. Dr. C. v. Hess in München und Prof. Dr. W. Lohmannin Schuelm i. W.; Geheimrat Prof. Dr. O. Hildebrand in Berlin; Prof. Dr. G. Holzknecht in Wien; Geheimrat Prof. Dr. G. Hoppe-Seyler in Kiel; Prof. Dr. R. Th. v. Jaschke und Prof. Dr. P. W. Siegel in Giessen; Geheimrat Prof. Dr. F. König in Würzburg; Geheimrat Prof. Dr. Fr. Kraus und Prof. Dr. Th. Brugsch in Berlin; Prof. Dr. Ed. Müller in Marburg a. L.; Prof. Dr. H. Rieder in München; Prof. Dr. F. Siebenmann in Basel; Geheimrat Prof. Dr. W. Stoeckel in Leipzig; Prof. Dr. W. Straub in München; Prof. Dr. F. Voelcker in Halle a. S.; Prof. Dr. R. Volk und Dr. M. Ostermann in Wien; Hofrat Prof. Dr. O. Walkhoff in Würzburg; Geheimrat Prof. Dr. A. v. Wassermann und Geheimrat Prof. Dr. M. Ficker in Berlin-Dahlem; Prof. Dr. R. Werner in Heidelberg. Herausgegeben von Prof. Dr. Julius Schwalbe, Geh. San.-Rat. Mit 685 Abbildungen. Sechste, Auflage. Leipzig: Verlag von Georg Thieme, 1923.

This is the sixth, improved and enlarged edition of this encyclopedic work on therapeutic technic, revised only two years after the previous edition. A chapter on obstetrical technic, written by v. Jaschke and Siegel, has been added to complete the subject of therapeutics. All the various chapters and even subdivisions of some of them, as that on radiology, have been written by the masters in their respective specialties. The chapters are arranged as follows: the preparation and application of drugs, including drinking and bathing waters; immunotherapy; dietotherapy, hydrotherapy, thermotherapy, the various forms of irradiation therapy, including radium and mesothorium, massage, gymnastics, mechanical orthopedics, various surgical procedures, treatment of skin diseases and syphilis, the nutrition of the healthy and sick infant and the treatment of individual organs and systems of organs. This is the most complete single volume on the subject and it contains a great amount of material which is not mentioned or described in such profuse detail in other works on therapeutics.

SURGICAL CLINICS

The Surgical Clinics of North America. Volume III, Number 5. Minneapolis-St.Paul Number. Published, October, 1923. Philadelphia and London: W. B. Saunders Company.

Twelve clinics and one contribution constitute the material of this most interesting number of the *Surgical Clinics*. The contribution by Farr, on Some Helpful Surgical Adjuncts and Methods, is admirable, not only in the text matter but likewise in its splendid and numerous illustrations. More of these contributions would make the *Clinics* still more valuable to the practitioner interested in surgery as a performer, rather than as an observer. Of the clinics, special mention must be made of Thoma's on urological subjects, J. D. Lewi's clinic on external nasal deformities of traumatic origin, and Lerche's clinic on multiple strictures of the esophagus and hourglass stomach following lye poisoning. The usual high typographical standard is fully maintained in this volume.

PHILOSOPHY OF CIVILIZATION

The Philosophy of Civilization. By R. H. TOWNER. In Two Volumes. New York and London: G. P. Putnam's Sons, The Knickerbocker Press, 1923. Pp. ix-290; iii-340.

Here is a writer earnestly desirous of turning the current of forces at work against the permanency and improvement of our civilization. He is not afraid to challenge institutions long cherished or movements heralded by many as great signs of progress toward the betterment of mankind. He challenges them where they most deceive us, reversing them so that the subtle dangers which they conceal become apparent. He asks us to consider the place which alcohol has played in building up civilization rather than in casting it down and sounds a serious warning against the false ideal of its disuse. He attacks the enforcement of conformity against the more vital diversity which has prevailed in regard to literacy and other conventionally esteemed benefits of modern civilization. He points out in the same way the evils of espionage and of authoritative dominance in any direction. He discusses the place of God in the development of man, the relation of intellect and emotion, and points out the differences between a fortuitous civilization and one consciously directed. He urges the latter as the means of yet rescuing civilization from the evils preying upon it and which have overthrown civilizations in the past.

Thus the book has much in it to enlist thought. But it is full of weakness too. It is the second volume in which one finds this more valuable matter. Yet even here, as more completely in the first volume, the author gathers together much material to which he offers too credulous and uncritical a mind. He himself seems not to have cast off an obedience to authority in thinking which leads him to accept traditions and "historical" statements without the criticism of a mind demanding scientific accuracy. The faults of his book are due also to his apparently astounding ignorance of psychology and his ignorance or carelessness in the use of biological facts. Through these he permits himself to follow certain narrow perspectives, tempting and deceptive because they lead to such marvelous lengths. They have not the breadth which would give his thought a far more convincing relation to the practical needs which a sick civilization lays before us. His ignorance of these two fundamental sciences, or his careless handling of them, weakens his logic. It makes possible the development of such a thesis as that which fills his first volume and obtrudes itself amid the more sincere thought of his second volume. This thesis is that the rise and preservation of progressive civilizations depend upon motherhood through frigid women. Their aversion to sexual life is then passed on to the offspring to make a race endowed with a higher nervous organization. When various factors, religious or otherwise, disturb this situation and the population is recruited mostly from women who enjoy their reproductive function, the sexual union at least, then civilization declines. The passion of the father may be always the same. Apparently paternity has no place in heredity or in this immediate heredity. The exaggerated insistence upon this theory and the author's uncritical reliance upon whatever he may heap to its support indicate the weakness which pervades a book that contains much of good.

EVOLUTION AND EUGENICS

Studies in Evolution and Eugenics. By S. J. HOLMES, Ph.D., Professor of Zoology in the University of California. New York: Harcourt, Brace and Company, 1924. Pp. v-261.

Holmes has written a book in brief chapters which bring instruction and stimulus to further thought in a very direct, simple form. There is a review of the theories through which the science of evolution has gradually won its way and is still pressing into the knowledge of life. The various theories examined by the author are presented chiefly in their historical setting as others have propounded them, tested them as to their usefulness, rejected them, modified them, or advanced new ones upon them. The writer makes it clear that these theories belong to a science that is young and one, because of the subject with which it deals, difficult to formulate with authoritative precision. Some of the theories of heredity and of the facts which slowly come to light might have led the writer on still further, one feels, and so might have many of the psychological implications, chiefly in the latter part of the book.

Yet we can not quarrel with him because he has remained the biologist throughout and examined not only theoretical matters but certain very practical problems of the day with the objective fairness of the biologist's point of view. This has led him to avoid all dogmatic statement and to examine each question from even opposing aspects. On a biological background there is no true opposition, only a dispassionate search for facts upon which to act. One feels that sociologically and biologically more facts should have been assembled as, for example, in the discussion of the negro problem. Yet one is only stimulated to further question and examination for himself upon the pertinent matters discussed. These are birth control, immigration, eugenics, race mixture in general and especially the position of the negro in our country. Absolutely dispassioned a writer cannot be. One finds here an optimistic spirit which tends in some degree to overweigh facts. This, however, is not obtrusive enough to depreciate the value of the book.

Medicoliterary Notes.

Visual Education is the title of a volume announced by the University of Chicago Press. It will record the results of experiments made under the direction of Professor Frank N. Freeman, of the department of educational psychology of the University of Chicago, in the public schools of Chicago and other Illinois cities and towns, in the use of motion films and other means of visual instruction. The experiments were financed by a special grant from the Commonwealth Fund to the University.

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The medical department of a recent issue of the London *Times* contains an interesting discussion of periodical health examinations. It was recently suggested to the English medical profession, and, strangely enough, by a dock hand, not an insurance company, that policy holders submit each year to a medical "overhaul," and that a rebate or premium be allowed to those who should agree to follow this procedure.

* * *

Anatole France's preface to Pierre Calmette's new book, *Les Poupées de Paris,* propounds the theory that the declining birth rate of France is due in part to the recent craze for fantastic dolls among the women of the French capital. He declares that the women of France are forgetting their duty to the race and the nation in "playing dolls."

* * *

Geography and Natural Selection was the title of an interesting paper read by Professor Ellsworth Huntington, of Yale University, at a recent meeting of the American Association for the Advancement of Science. Professor Huntington gave some of his views as to why Australia has a lower death rate than any country in the world except New Zealand. He believes that the explanatnon of this and of the prosperity of the country is to be found in natural selection. Australia is so far away from the rest of the world that only healthy and fairly prosperous people are likely to journey there, and, since the climate is good and living conditions favorable, these people form a healthy stock and have healthy children.

* * *

A press notice from France announces that Dr. Georges Gautier spoke recently before the French Academy of Medicine on his new method of improving respiration. After many years' study and experimentation, he has developed a method of enlarging the air passages, so he states, that will do away with colds, hay fever, asthma, headaches, deafness, and snoring.

* * *

In rural districts of Germany dried leaves are being used as food for animals. This leaf hay is first dried out of doors and then artificially and a product similar to bran is obtained.

* * *

A unique collection of books and manuscripts has been lost through the Japanese earthquake, including the Korean *Chronicles of the Li Dynasty in* 790 volumes; the *Topography of Japanese Counties and Towns,* 6,400 volumes; and the great Chinese *Encyclopedia* in 9,998 volumes.—*Living Age.*

* * *

Another recent volume of near human animal, including fish, stories, is that of Horacio Quiroga, entitled *South American Jungle Tales.* The stories are told with the utmost quaintness and naïveté, until one almost believes that the writer is taking himself and his subjects seriously.

* * *

Two books have been published recently by William Heinemann, Ltd., London. One of these *Psycho-Analysts Analyzed,* by Dr. P. McBride, is a criticism of psychoanalysis. The author denies that psychoanalysis is based on science, and gives his reasons for his views. The book is ably written.

* * *

The other book is *The Culture of the Abdomen,* by F. A. Hornibrook, with a preface by Sir Arbuthnot Lane, Bart. M. S. Mr. Hornibrook is a skilful exponent of physical culture, and all that pertains to it. He believes in the gospel of physical fitness, and has worked out for himself successful methods of bringing this about. He first tried the methods on himself, thereby reducing his weight, while at the same time gaining greatly in health and vitality. As described by himself these are methods whereby it is possible to localize effort to the abdominal region to promote more internal abdominal activity, and to concentrate on correct posture. Posture is the keynote of the system. The book is well written and well illustrated.

* * *

A portion of New Jersey is carrying on a vigorous anti-rat campaign. Monmouth County is reported to harbor at least one hundred thousand rats, and a ton of poison is being used to eradicate them.

* * *

The *Child's Health Magazine* is the new name for *Mother and Child,* published by the Child Health Association. The pages of the new publication are twice as large as formerly and the number of illustrations has been greatly increased.

* * *

William Beebe, the zoologist, is directing an expedition to British Guiana which hopes to bring back, among other specimens, a living hoatzin. This is a strange bird whose young have claws on their wings, with which they climb through the foliage of mangrove trees in which they live. Attempts have been made before to bring these birds to this country, but their diet apparently is limited to one kind of tropical plant, without which they die.

* * *

Dr. J. C. Curran, medical director of the Near East Relief, is helping to organize a nation wide campaign for condensed milk to use in the work of the association. A transcontinental milk train will be run from Los Angeles to Baltimore for the purpose of collecting one million cans of condensed milk.

* * *

"Is There a Foolproof Science?" is the title of an article in a recent number of the *Atlantic.* L. P. Jacks, the writer, believes that there is not, not only in natural science, but in philosophy and religion, all three of which, he states, should be working together in the pursuit of truth instead of quarreling with one another. "May we not say," he writes, "that a naturalist who makes a human use of natural science is nearer the kingdom of God than a supernaturalist who makes inhuman use of supernatural science?"

* * *

Dr. B. Liber, author of the *Child and the Home,* has a new book just out which he calls *As a Doctor Sees It.* It consists of a number of short stories of life as the physician finds it. Dr. Liber has illustrated the volume himself.

* * *

The Eyesight Conservation Council of America has inaugurated in the schools of the South an eyesight conservation campaign similar to that recently brought to a close in New York, New Jersey, and the New England States. The council is being aided in its efforts by U. S. Commissioner of Education Tigert and other Federal and State officials.

* * *

We read in press notices from two different New York papers that Hungary has banned by law as not fit for the public's morals *Yes, We Have No Bananas Today"* and Victor Margueritte's *La Garçonne.*

* * *

The Association for the Prevention and Relief of Heart Disease is endeavoring to raise a budget of $20,000 for its work during 1924. The association is supported entirely by membership fees and voluntary contributions. Twenty-nine New York hospitals are working in cooperation with it, and it has established forty-three cardiac clinics where six thousand patients are being treated. Dr. Haven Emerson, the president, states in a recent letter to the press that heart disease is now the most frequent single cause of death. Last year its toll was 155,000 lives.

* * *

Are Parents People? is the title of the first of a collection of short stories by Alice Duer Miller, written in her usual amusing and entertaining style.

* * *

Dr. William H. Park, of New York, read two papers at a recent monthly meeting of the Atlantic County Medical Society at Atlantic City, N. J., in which he told of results he had obtained at the Willard Parker Hospital during eight years of experimentation with inoculation against measles. This he does by means of a few drops of blood from a convalescent, creating immunity for several weeks, sometimes for a few months.

Abstracts from Current Literature

PEDIATRICS

Acidosis in Infants and Children.—Julius H. Hess (*Northwest Medicine,* November, 1923) says that the treatment of acidosis must first be directed to the prevention of a further production of more acids; second, to replenishing the alkali reserve; third, to the elimination of the acids and their salts; and, fourth, to the treatment of the underlying factors, whether they be acute infections, starvation or organic diseases.

Large quantities of water should be administered by mouth, if it is tolerated. When not retained, subcutaneous or intraperitoneal administration of normal saline or Ringer's solution is to be recommended, the latter as often as every six hours, if necessary, during the early treatment. The total quantity of all fluids given should be recorded daily and every effort made to administer maximum quantities.

In the presence of nondiabetic acetone body acidosis, glucose should be given in all cases. Three methods of administration are available, namely, by mouth, rectum, or intravenously. By mouth, a five to ten per cent. solution may be administered every two to four hours, in quantities depending upon the age of the child and the tolerance of the gastrointestinal tract. By rectum, a five per cent. solution is best employed, which may be administered intermittently at intervals of three or four hours, quantities varying from sixty to one hundred and twenty c.c. (two to four ounces) being used, or in young infants and older children who are not too restless the drip method may be used. When there is a tendency to return the glucose solution, it may be necessary to compress the buttocks for at least a half an hour after each administration.

A careful record should be kept of all solutions administered by this method and so far as possible the retained fluid estimated. In most cases a litre can be administered in the course of twenty-four hours. For intravenous use, five or ten per cent. of glucose in Ringer's or normal saline solution may be used, depending upon the size of the child. From sixty c.c. in small infants, to three hundred c.c. in older children, may be injected at one time, to be repeated as indicated. For intraperitoneal injection normal saline or Ringer's solution may be used. Fifty to five hundred c.c. may be administered by the gravity method. Glucose should not be administered intraperitoneally.

Alkalies are given a secondary place in the therapy of acidosis, due to concentration of ketone acids in young children. Glucose rather than bicarbonate is the prime agent in the treatment of nondiabetic ketosis. The same is true of the lactic acid type. If administered, sodium bicarbonate should be given by mouth or intravenously. By mouth from one to two gm. may be given at four hour intervals, dissolved in water. For intravenous use a two per cent. solution is best employed, as it is isotonic with the blood. The same amounts of solution can be administered intravenously as recommended for the administration of glucose.

While the administration of glucose as recommended may carry the patient over the first emergency period, insufficient amounts of carbohydrate are given in this way to meet its needs. Efforts should, therefore, be directed toward the further administration of carbohydrates by mouth as soon as the condition of the stomach permits. After a short period of rest, the time of which will be indicated by the ability of the stomach to retain inert fluids, which in most instances, is not over six to twelve hours, further administration of sugars and cereals should be begun.

Thick cereal pastes, to which cane sugar or maltose dextrose compounds have been added, are usually best retained. They may be given in small quantities at two hour intervals, or at longer intervals with the administration of corn or maple syrup, or honey in teaspoonful or larger amounts. Malted milk is often well taken. Milk chocolate and plain candy, such as caramels, are valuable and are usually well taken by children who have eaten them previously and have a liking for them. Various plain wafers sold on the market may be tried on the second day. Fruit juices sweetened, more especially orange juice, should be given in small quantities. If orange juice is retained, larger quantities diluted with sweetened water should be given and continued. Often one or more oranges can be fed in twenty-four hours during the first day after vomiting ceases. Skim milk, or better skim buttermilk, can usually be given by the third day. Whole milk and fats should be withheld until the child is convalescent. The feeding of carbohydrates should be pushed as a preventive measure in the presence of acute infections.

The acute symptoms requiring further medication are gastric and intestinal distention and the retention of decomposing food in the intestinal tract, vomiting and syncope. To clear the intestinal tract milk of magnesia or some other mild saline laxative, together with enemata, are best. For vomiting in the presence of gastric distention lavage with a weak bicarbonate or citrate solution is often most beneficial. Small doses of carbolic acid, administered at two hour intervals for three or four doses, together with tincture opii camphorata for the relief of vomiting and restlessness, are indicated. In the presence of syncope it may be necessary to administer cardiac and respiratory stimulants.

In extreme cases of socalled epidemic acidosis, blood transfusion has, in the limited number of cases in which we have had occasion to resort to this measure, yielded striking results.

The indicated treatment for underlying chronic respiratory, cardiac and renal conditions, if present, must be instituted, following the subsidence of acute symptoms.

Treatment and General Management of Eczema in Infants in Private Practice.—Alan Brown (*Canadian Medical Association Journal,* December, 1923) says that while the exact underlying causes are not clearly understood there are three factors which are directly operative in producing eczema in infants: a, overfeeding with either fat or sugar, or both; b, local irritation; c, anaphylactic idiosyncrasy to foreign proteins, most commonly lactalbumin, egg white, casein, or beef protein. The remedies at our disposal are based generally upon these three factors. He then discusses several different types.

Breast fed infants.—When eczema occurs in breast fed infants it is usually found in fat, well nourished infants who have been grossly overfed on a two or three hour interval. The child usually has also loose, frothy stools and a good deal of gas. The food intake should be reduced a third or even a half, and the nursing interval made four hours. The infant should not be weaned. In many cases it is necessary to give half to one ounce of protein milk before nursing to reduce the fermentation still further. The mother should be encouraged to empty her breasts, otherwise she may lose her breast milk entirely. Occasionally one sees a dry scaling eczema in a breast fed infant who has been receiving insufficient nourishment, the problem then is to reestablish the breast milk and supply the deficiency. In addition thirty grains of sodium bicarbonate may be given daily in the drinking water.

Artificially fed infants.—The problem here is more difficult. In mild cases it is permissible to use full skimmed milk and make up the required calories with barley, granum or groats flour cooked with thirty grains of sodium bicarbonate, while the antiscorbutic and antirachitic factors are supplied by small doses of orange juice and cod liver oil. If orange juice increases the eczema it may be changed to tomato juice or potato water. When the eczema is moderately severe he recommends the substitution of evaporated for plain cow's milk, modified in the same manner as outlined above.

With regard to idiosyncrasy to food proteins, he has obtained gratifying results in a few cases from the removal of the offending protein but plainly feels that he might have obtained just as good results from general dietetic and local measures without the knowledge of the skin tests. Sometimes the test will show a reaction to a food which a breast fed infant has not had, but which has been part of the food of the mother. If the offending protein be omitted from the mother's diet, a decided improvement in the local skin condition sometimes follows.

Local care.—No water should be used until the eczema has disappeared. The infant may be washed with cotton dipped in olive oil. No wool should come in contact with

he skin. Scratching must be prevented. For wet or weeping eczema crude coal tar is almost a specific, spread on with a wooden spatula two or three times a day for three or four days, then allowed to wear off. A bland, protecting ointment is then applied. For the dry and acutely inflamed type he recommends an ointment made of crude coal tar, zinc oxide, and powdered starch, each two drams, and enough vaseline to make two ounces. This is to be applied twice a day. If there is considerable thickening or scaling of the skin the addition of ten grains of salicylic acid to the ounce is beneficial. For dry and rough eczema not acutely inflamed tar is not necessary; bismuth paste or lanolin applied liberally several times a day will be sufficient. For seborrheic eczema, "cradle cap" or "milk crust," the scalp should be soaked in olive oil at night, the scales combed off in the morning, and an ointment of four per cent. resorcin rubbed in vigorously. Once or twice the scalp should receive a green soap shampoo. The resorcin has to be continued for some weeks. Eczema intertrigo about the genitalia and thighs is treated by removal of diapers, keeping the parts exposed to the air in a warm room, the excreta being wiped off with cotton dipped in olive oil, the application of bismuth or tar paste, and the administration of enough sodium bicarbonate to keep the urine alkaline. Elsewhere keep the opposing surfaces apart and dust with zinc stearate. For papular eczema sop the skin over with a thin starch solution, which is allowed to dry, and in the evening rub in tar paste. Repeat several times. For infected eczema ammoniated mercury ointment applied thoroughly over the infected area is indicated. Furuncles should be opened in the usual manner.

Serotherapy in Measles.—H. L. Ratnoff (*Archives of Pediatrics,* October, 1923) follows the Degkwitz technic, giving the prophylactic injections between the second and sixth day after exposure to infection. The blood is obtained by vein puncture, seven to fourteen days after the establishment of convalescence from uncomplicated measles, from children free from tuberculosis or syphilis. The mixed serum from various patients is used either immediately after it has been obtained by allowing the blood to coagulate for twenty-four hours in an icebox, while still in the fresh state, or was preserved in ampoules with one drop of a five per cent. solution of carbolic acid to ten c.c. of serum. The serum may also be preserved by desiccation. Adults give the most potent serum. The immunizing dose is two to five c.c. of serum, which is sufficient to project a child if given four days after exposure to infection. If the administration is delayed to the fifth or sixth day, the dose must be doubled, and after the eighth day, the treatment is of no avail. As a routine, three to five c.c. may be used. To reinforce the immunity, the serum should be injected as late as possible in the incubation period, employing a dose just sufficient to effect temporary immunity. Four weeks thereafter the patient should be reinjected with the intention of augmenting active immunity by increasing the proportion of antigens. Properly employed, this serum therapy is attended by no danger, and has no contraindications.

Symptoms and Treatment of Thymus Hypertrophy in Infancy.—Rowland G. Freeman (*Archives of Pediatrics,* October, 1923) asserts that enlargement of the thymus in infancy and early childhood with characteristic symptoms is not uncommon. These symptoms include holding of the breath, especially with cyanosis, sometimes followed by unconsciousness, stridor, convulsions, or asthma. These symptoms are readily relieved by efficient röntgenotherapy, which should be continued until no thymus shadow is seen, even though the symptoms have been relieved.

Relative Immunity of Infants under Five Months of Age to Infection with Measles.—Charles Hermann (*Archives of Pediatrics,* October, 1923) concludes that infants under two months of age, whose mothers have had measles, are absolutely immune to infection with measles. Infants under five months of age are relatively immune, and a certain number retain this relative immunity up to the months of age. After the ninth month they are as susceptible as older children, and practically all contract the disease on exposure. Artificially as well as breast fed infants enjoy this immunity with a slight difference in favor of breast fed infants. The immune substance are probably chiefly conveyed to the fetus through the placental circulation. There is no substantial evidence that any important part of the immunity is due to the ingestion of breast milk.

Bacterial Infection of the Urinary Tract in Infancy and Childhood.—E. Bellingham Smith (*Lancet,* September 22, 1923) states that acute cystitis due to Bacillus coli alone or to mixed infection of Bacillus coli and streptococci, is generally readily recognized by the dysuria and frequency, and the nature of the infection is readily discovered by the microscopical examination of a catheterized specimen of urine. Acute pyelitis, however, may give rise to some difficulty unless it is always remembered that unexplained fever in infancy or childhood may have its origin in a Bacillus coli infection of the urinary tract. In many of these cases there are few occasions in which the symptoms indicate irritation or inflammation of the renal pelvis or kidney itself. Where there is acute hematuria, the diagnosis of stone, or of rare conditions like essential hematuria or scurvy, will not be made if a simple cultivation of the urine is made and shows the presence of Bacillus coli.

The conditions to be differentiated are: acute appendicitis, typhoid fever, general tuberculosis, meningeal conditions, pneumonia, with or without a complicating empyema or acute otitis media, endocarditis and endemic malaria. The recurrent fever should be differentiated from that occurring in pulmonary tuberculosis, glandular tuberculosis of the abdomen, tonsillitis and that occurring in rheumatic and nervous children.

In certain cases infection of the bladder certainly takes place as a result of the soiling of the vulva by feces and it is possible that a secondary infection of the renal pelvis and kidney results from direct spread, such spread being facilitated by possible inflammation of the bladder, obstruction of the ureteric orifice, and stagnation of urine in the ureter. A number of cases show pyelitis or pyelonephritis as a sole lesion. In these it is assumed that the organisms enter the blood stream and select the kidney as the victim, owing presumably to some lowering of the resistance of that organ. Lastly, there is the lymphatic theory of the spread of infection, one path being by way of the lymphatics of the ureter from the bladder to the kidney, the other being directly from the lymphatics of the large bowel to the lymphatics of the capsule of the kidney.

Effect of Caffeine in Infancy. — Lili E. Herzfeld (*Monatsschrift für Kinderheilkunde,* October, 1923) states that there are pronounced differences in the effect of caffeine, not only between those in adolescence and infancy, but also between normal infants and those previously injured and subsequently hypersensitive to caffeine. Following the administration of 0.2 to 0.3 gram of caffeine sodium benzoate to healthy infants, slight changes in the respiration, the pulse and the blood pressure appear; however, diarrheas and loss of weight are frequently observed. In debilitated and convalescing infants even the usual dose of 0.05 gram of caffeine may occasionally produce these symptoms of toxicity.

The Position of Infantile Nephritis in Modern Renal Pathology.—Leo Mendel (*Monatsschrift für Kinderheilkunde,* October, 1923) is convinced that only the number of the diseased glomeruli indicates whether a focal nephritis or a diffuse nephritis is present. The transition forms of both disease pictures are so fleeting that their differentiation appears to be unnecessary. The author is opposed to considering infantile nephritis as a focal nephritis and as a separate disease entity. He sees another reason for considering infantile nephritis as a diffuse nephritis in the fact that scarlet fever is very frequently the cause of infantile nephritis and the fact that scarlatinal nephritis is the classical case of diffuse nephritis. Consequently the author believes in the possibility of subsequent sequelæ even in cases of immediate apparently benign cases.

Dilatation of the Aorta in Children Associated with Chronic Interstitial Nephritis.—J. H. Sheldon (*British Medical Journal of Children's Diseases,* October-December, 1923) believes that general dilatation of the aortic arch is a possible sequel of chronic interstitial nephritis in children. It may be of sufficient extent to produce the clinical signs of aneurysm, and is capable of causing aortic regurgitation. In two cases reported, the aorta showed very little departure from the normal structure, indicating that the dilatation is probably a mechanical consequence of the hypertension. To a minor degree the condition is probably a commoner one than is usually supposed.

GASTROENTEROLOGY

Elimination of Dyes by the Stomach.—Paul Saxl and D. Scherf (*Wiener klinische Wochenschrift,* September 20, 1923) have found that only the lipoid soluble dyes, such as neutral red and methylene blue, are excreted with the gastric juice. The dyes that are only water soluble, such as indigo-carmin, congo red, pyorrhol blue, and fluorescein, are not excreted by the gastric juice. There is no special localization for the excretion. Dyes do not pass into the interior of the stomach in the presence of complete achylia.

Gastromyotomy: An Operation for the Cure of Chronic Ulcer of the Stomach.—T. C. Clare (*Lancet,* September 22, 1923) recommends gastromyotomy only in the presence of a chronic indurated ulcer of moderate size near the lesser curvature, uncomplicated by hour glass contraction and not adherent to the pancreas. If the ulcer is found to be on the anterior gastric wall, a curved incision, about four inches long and with its convexity downward, is made through the peritoneal layer only below the ulcer and not near indurated tissue. The peritoneum is then reflected for about a quarter of an inch on either side of the incision and the muscle fibres are defined. The incision is then carried down to the muscularis mucosæ and the divided muscle fibres are separated on either side of the incision by gauze dissection, and Lembert sutures are inserted into the peritoneal coat in such a manner that the cut edges of the peritoneum are inverted into the gap in the muscular coat. If the ulcer is located on the posterior wall of the stomach, the latter is exposed through an opening in the mesocolon and the posterior gastric wall is incised; the anterior incision is also made, thereby practically isolating the ulcer as far as the circular muscle fibres are concerned. This operation is the link between medical and surgical treatment, the purpose being to encourage healing the ulcer by diminishing the functional activity and thus resting the stomach. This is accomplished by putting out of action for a time the actual muscle fibres whose contractions irritate the ulcer.

Refractometric Determination of Pepsin in the Gastric Contents.—Emil Reiss (*Schweizerische medizinische Wochenschrift,* March 29, 1923) describes the technic as follows: Ten c. c. of the filtered gastric juice are diluted with an equal amount of one twentieth normal hydrochloric acid, of which mixture one drop is examined in the Pulfrich dipping refractometer (control). One half gram of beef fibrin or an equal amount of coagulated egg albumen is added to the gastric juice to be tested (both in the form of a dry powder) and the mixture is placed into an incubator. If fibrin is used it is reexamined refractometrically after ten minutes and if albumen is used after two hours. The difference in the refraction before and after incubation expressed in divisions of a scale of the apparatus or in units of the refraction index in grams of albumen, indicates the resulting action of the pepsin. Values between 4.5 to 7 divisions on the scale and more indicate a normal average and less than four parts denote a reduction of peptic activity. For exact scientific investigations the same hydrogen ion concentration ($P_h = 1.77$) should be maintained. This is accomplished by comparing a standard solution of $P_h = 1.77$ with the gastric juice mixed with a suitable indicator (crystal violet or thymolsulphthalein). Such amounts of acid or alkali as are required to produce like colors in the standard tube are added to another specimen of gastric juice (without indicator) and the procedure is repeated as described. This technic requires little time and can also be applied to small amounts of gastric juice.

Ileocolic Stasis.—Sidney K. Simon (*Southern Medical Journal,* October 1923) says that much can be accomplished in the treatment of chronic intestinal stasis if the cooperation of the patient is obtained and medical measures are carried out intelligently. The use of stereotyped, printed diet forms cannot be too strongly condemned. The various dietetic idiosyncrasies of the patient should be carefully considered, especially as the diet employed must be persisted in for a long period of time. The basic principle in the dietary involves the substitution of coarse, gritty and fibrous food substances for the bland, easily macerated or digestible variety. Meats and eggs should be greatly if not entirely restricted, since their high protein content furnishes ready pabulum for the more septic types of proteolytic bacteria. The mushy forms of cereals should be replaced by coarser varieties, such as bran, oatmeal and cornmeal. In the same manner the highly milled wheat flour should give way to the ground whole wheat products. Raw fruits and vegetables of all kinds should occupy a prominent place on the diet list. Buttermilk and malted milk, in the main act as better stimulants of intestinal peristalsis than does sweet milk. Sweets, as a rule, are objectionable, chiefly on the ground of their tendency to produce gaseous fermentation, but honey is apt to act as a mild laxative and rarely produces digestive disturbances. An important point frequently overlooked in these cases is the copious drinking of water. Unless special contraindications are present, the patient should be instructed to imbibe freely during the day, starting with two or three glasses upon arising.

Next in importance to diet is the carrying into execution of a well directed plan of abdominal exercises, which should be insisted upon as a regular routine twice a day and persisted in for several months. Abdominal massage may likewise prove useful, but does not yield as good results as properly directed physical exercise.

High colonic irrigations have been found useful by some observers in assisting in the removal of longstanding fecal accumulations in the right colon. In order to prove effective this method must be carried out with painstaking detail according to the plan recently described by Rehfuss and others. Transduodenal lavage has proved a valuable adjunct in many refractory cases.

Satterlee and Cotton mention an autogenous colon vaccine in the treatment of advanced cases of chronic intestinal stasis. The patient is first purged with castor oil and the third stool obtained, which is found to contain the most virile bacilli from the cecocolic region is plated for the cultivation of the colon organisms. The vaccines, thus prepared, are given as a routine every four days in doses of from one hundred to three hundred million. Bassler, some years back, reported success with colon vaccine.

Pharmaceutical products should be made to play an insignificant rôle in the treatment of intestinal stasis. Indeed the daily use of medicinal purgatives should be broken up and the patient should be made to see the logic and necessity of this plan. The salines are especially to be condemned since they liquefy the contents of the bowl and thereby increase the absorbability of the toxic bodies. Where a daily evacuation is not forthcoming at the beginning of treatment a simple tap water enema at bed time is preferable to purgatives. Petroleum oil, though recommended highly by many English authorities, is rarely productive of permanent good and should occupy only a temporary place, if any, in the treatment of intestinal stasis.

CLINICAL MEDICINE

Clasmatocytes and Tumor Cells in Cultures of Mouse Sarcoma.—Warren H. Lewis and George O. Gey (*Bulletin of the Johns Hopkins Hospital,* November, 1923), state that the use of Drew's colloidal calcium embryonic juice medium has given excellent results as a fluid for the cultivation of mouse tumors. Both the tumor cells and clasmatocytes, which were abundantly present in tumor No. 18, migrated out in culture, and their cellular details could be studied separately.

Sodium and Potassium Content of Blood Serum in Various Diseases and of the Cerebrospinal Fluid in Proved and Suspected Syphilis.—Charles S. McVicar and Helen Ross (*Journal of Laboratory and Clinical Medicine,* November, 1923), found that the blood serum of fifty-six patients with various diseases showed an average sodium content of 365 mg. for each 100 c.c. The cerebrospinal fluid of nine patients with syphilis showed an average sodium content of 382 mg. to 100 c.c.; 118 patients with various diseases had an average potassium in the blood serum of 20.7 mg. to 100 c.c., while the average figure for potassium in the cerebrospinal fluid of 117 cases with proved or suspected syphilis was 10.5 mg. to 100 c.c.

Chemical Factors in Fatigue.—Norris W. Rakestraw (*Journal of Biological Chemistry,* May, 1923) subjected nine men to running rapidly up and down stairs for about ten minutes, or until almost completely exhausted. Chemical analysis of the blood following such exercise reveal the following facts: uric acid, although sometimes increasing but slightly following a short period of exercise, continues to increase for some time thereafter. Sugar, increasing decidedly after such exercise, rapidly returns to normal again, and has generally fallen to a subnormal level at the end of an hour and a half. There is a slight tendency for chlorides to increase immediately following exercise.

Comparative Antiphlogistic Effects of Salicylate, Cinchophen, and Neocinchophen in Experimental Edema of the Head and Neck.—P. J. Hanzlik and M. L. Tainter (*Journal of Laboratory and Clinical Medicine*, December, 1923) produced inflammatory edema of the head and neck of rabbits by paraphenylenediamin, in order to study the effects of salicylate, cinchophen, and neocinchophen. The results of their experiments do not indicate that these drugs ameliorated the edema and blood concentration effects of dara in any way, and therefore as antiphlogistics under the conditions of the experiment they were negligible. The beneficial therapeutic effects of these drugs in rheumatic fever appears to be produced neither through etiotropic nor organotropic, but rather through symptomatic action, the benefits being mediated through antipyresis and analgesia.

Studies on the Pharmacology of Sodium Citrate: Circulation.—George R. Love (*Journal of Laboratory and Clinical Medicine*, December, 1923) performed the work reported on dogs under light ether anesthesia. This study brought out the following points: The heart muscle of dogs is depressed by doses of thirty mg. sodium citrate per kilo or more. The vasomotor centre is stimulated by suitable doses of citrate. The endings of the accelerator nerves to the heart are markedly stimulated by large doses of citrate. There is some evidence that large doses cause active dilatation of the vessels of the kidney. Plethysmographic tracings of the extremities and intestines show no peripheral action upon blood vessels. Sodium citrate, in the dose used and at the rate injected in blood transfusions, produces no effect upon circulation which would militate against its use as an anticoagulant.

Letters to the Editor.

THE BANTING RESEARCH FOUNDATION

TORONTO, CANADA, *March 6, 1924.*

To the Editor:

The discovery and development of insulin by Dr. F. G. Banting, Mr. C. H. Best and other cooperating investigators, has brought relief to a multitude of sufferers from diabetes throughout the world. At a low price this boon has been placed within reach of all, but it is well known that only a beginning has been made in alleviation even of this one malady. Notwithstanding the magnificent advances that have been effected in arresting or averting many of the most grievous attacks of disease on human life, mankind is beset by enemies. Their strategy must be discovered and circumvented. This can be done only by patient research conducted in the main by skilled investigators who devote their lives to scientific inquiry. For these investigators the public at large must provide the means of support, for they it is who benefit immensely thereby. Such work has been going on quietly all over the world. Laboratories in the universities have groups of investigators working in cooperation under the direction of competent scientists. But only now and then does a result such as Dr. Banting achieved strike the imagination of the world. It is, therefore, but appropriate that advantage should be taken of it to appeal to the grateful public for support in making possible the continuance and prosecution of this work and of other investigations in medical science. To effect this and to signalize the discovery and the development of insulin, the Banting Research Foundation has been created.

The purposes of this foundation have been defined to be: 1. To provide, in the first instance, further funds for the support of the Banting and Best Chair of Medical Research at the University of Toronto. 2. To establish a fund for the adequate financial support of such scientific workers as may have proposed definite problems of medical research, and for whom funds are not otherwise available. Such assistance may be given to persons working in the University of Toronto or elsewhere.

All financial arrangements in connection with the collection and reception of the principal and subsequent expenditure of the income of the fund have been vested in a Board of Trustees, the members of which are appointed for a term of three years subject to reappointment at the end of their respective terms of office. Trustees have now been appointed as follows: Sir Robert A. Falconer, president of the University of Toronto, chairman; Lieutenant Colonel R. W. Leonard, member of the Board of Governors of the University of Toronto, honorary treasurer; Rev. Canon H. J. Cody, D.D., LL.D., chairman, Board of Governors, University of Toronto; C. S. Macdonald, Esq.; W. E. Gallie, M. D., surgeon in chief, Hospital for Sick Children, Toronto; J. G. FitzGerald, M.D., F.R.S.C., professor of hygiene and preventive medicine, and director of the Connaught Laboratories, University of Toronto; Professor V. E. Henderson, M.A., M.B., professor of pharmacology, University of Toronto; Mr. John W. Rogers.

The trustees propose to make an appeal to the public for funds in the immediate future. In the meantime they desire to bring these facts to your attention and they hope that you will be good enough to communicate them to your readers.

F. LORNE HUTCHISON, honorary secretary.

P.S. Subscriptions to the fund will be welcome at any time and should be made payable to the Banting Research Foundation, Toronto, Canada.

MERCURY IN TREATMENT OF DISEASE

PHILADELPHIA, *March 11, 1924.*

To the Editor:

I have read the article by Dr. Hugh Young, under the title of "The Treatment of Septicemia and Local Infections by Intravenous Injections of Mercurochrome 220 Soluble and of Gentian Violet," which appeared in the *Journal of the American Medical Association* of March 1, 1924, with great interest and pleasure.

That part of it which describes the treatment of several diseases by mercurochrome 220, offers nothing new to the profession excepting the compound of mercury used by him (Young), and his work simply corroborates the work of another, viz., Commander Barton Lisle Wright, Medical Corps, U. S. Navy.

In 1910 Dr. Wright first claimed by publication in the current medical journals of the time, that mercury (Hg) was a superior curative agent in all diseases of vegetable parasitic origin. From then until 1916, he published numerous articles under the title of "The Treatment of Diseases of Vegetable Parasitic Origin by Deep Muscular Injections of Mercury," or similar titles.

His reports embraced very many diseases of such origin. In one paper he described some thirty odd cases of colon bacillus septicemia, and his results in all the diseases mentioned in his reports were as prompt and as brilliant as those described by Young.

I trust that you will publish this letter in your magazine, in order that there may be no misconception among the members of the profession as to Dr. Wright's just claims to priority, based on his original work, as repeatedly published in the NEW YORK MEDICAL JOURNAL and the *Medical Record* between the years 1910 and 1916, inclusive.

J. A. CLOYD, M.D.,
Lieutenant, Medical Corps, U. S. Navy.

PRODROMIC DREAMS

CAMBRIDGE, MASS., *March 16, 1924.*

To the Editor:

In connection with a study I am making of the physical stimuli of dreams, I should be glad to receive from readers of THE JOURNAL instances of prodromic dreams, as Hammond termed them. These are dreams in which the presence of some organic disease, still in its incipiency, is indicated by a dream, or series of recurrent dreams, directly or symbolically localizing the part affected. An instance in point is a personal experience of nearly twenty years ago, in which the presence of a growth in the throat, unappreciated in waking life, was indicated by recurrent dreams of a cat clawing my throat. In the belief that there are many similar cases that only lack reporting—a belief fortified by researches which have already given me an interesting collection of such dreams—and that publication might be of future diagnostic assistance, I now appeal for data to medical men who have had experience of prodromic dreams in the course of their practice. Accounts of these will be gratefully received by me at 2 Riedesel Avenue, Cambridge, Massachusetts.

H. ADDINGTON BRUCE,
Editor, *The Mind and Health Series of Medical Handbooks.*

MEDICAL JOURNAL AND RECORD

A National Review of Medicine and Surgery

Gregory Stragnell, M. D., *Editor*

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NEW YORK, WEDNESDAY, APRIL 2, 1924

Medicolegal Notes.

HOSPITAL DEFENDANT'S DEFENCE WHEN SUED FOR BOTH NEGLIGENCE AND BREACH OF CONTRACT.

Where the complaint in an action against a hospital by a paying patient for injuries caused by a nurse alleged breach of contract and also negligence on the part of the nurse, it was held, Klein v. New York Eye and Ear Infirmary, 201 N. Y. Supp. 218, that the defendant was entitled to set up the defence that it is a charitable corporation, conducting a hospital for the cure and treatment of diseases of the eyes, ears and throat, for the benefit of the public, notwithstanding the plaintiff's contention that the gravamen of the action was the breach of the defendant's conduct, and that therefore the plea that the defendant is a charitable institution constituted no defense.

UNCERTAINTY AS TO FUNCTION OF UVULA.

In a malpractice action in which damages were sought for the removal of the uvula of the patient, a girl eight years old, while removing her tonsils, a medical witness for the plaintiff testified that he could not say to what extent the uvula was a necessary organ. The experts testifying for the defendant stated that the removal of the uvula would not be attended by any injurious consequences. All the experts said that it is proper to remove a diseased uvula, and the record showed that a diseased uvula is sometimes found with diseased tonsils.

The North Dakota Supreme Court held, Schmidt v. Stone, 194 N. W. 917, that the rule that expert testimony upon technical matters beyond the training or experience of lay witnesses must, when uncontradicted, be accepted as conclusive by the jury, was not applicable to the facts in this case, since all the experts admitted that much doubt and uncertainty existed among medical men as to the function, if any, of the uvula. "In the absence of evidence to the contrary," the court said, "the law presumes the exercise of a reasonable degree of care and skill by a physician and surgeon, and that the defendant was innocent of wrong. Nor does the fact that defects appeared after the operation or treatment, unless of such a character that negligence must be assumed from their unexpected presence, which is not the case here, constitute evidence of negligence. The maxim *res ipsa loquitur* has no application. Negligence will not be imputed to a physician without evidence or proof thereof."

Judgment for the plaintiff was reversed for a new trial for error in receiving, over objection, evidence for the sole purpose of contradicting answers of one of the defendant's medical witnesses on cross examination, to questions upon irrelevant or immaterial matters, contrary to the rule that such answers were conclusive on the examiner.

MEDICAL OPINION EVIDENCE AS TO PERSONAL INJURIES

In an action for personal injuries, a physician who e amined the plaintiff was permitted to testify that in h opinion plaintiff had suffered a severe concussion of t brain, and that in his opinion the brain conditions he fou upon examination indicated a severe injury to that orga The opinion of the witness was based upon stated fac which included the showing that plaintiff had been render unconscious for five days and nights. The jury had befo it undisputed evidence that he was thrown to the pav street from one of two colliding vehicles whose combin speed probably equalled forty miles an hour and that h head struck the paving or a rail. It was held, Gilchrist Kansas City Rys. Co., 254 S. W. 161, that the opini given was competent because it related to the nature injuries not open to observation by laymen or jurymen, a discoverable only by expert examination.

It was also held competent for plaintiff to ask a medic witness whether any kind of operation would improve ce tain conditions to which he testified, plaintiff having alleg that his injuries were permanent.

The plaintiff, in a personal injury case, on cross-examin tion of an expert medical witness for the defendant, p a hypothetical question to him, based on facts in evidenc and asked his opinion as to whether the existence of suc facts would produce or cause the plaintiff's appendicit and ovarian condition, and he replied, "Well, I think it possible." The Alabama Supreme Court held, Alaban Power Co. v. Bruce, 96 So. 346, that the trial court did n err in refusing to exclude this answer, the question bein relevant and asked on cross examination.

EVIDENCE OF FEAR OF BLOOD POISONING INADMISSIBLE TO MAG NIFY DAMAGES FOR INJURIES.

In an action for injuries to a hand, the trial court per mitted the plaintiff to testify that he had fears of bloo poisoning. The Kentucky Court of Appeals, Louisville N. R. Co. v. Davis, 250 S. W. 979, said, on appeal from verdict and judgment of $3,000, that, while there is a con trariety of opinion on the question, it is the rule in Kentuck that, in an action for personal injuries, one may testify t his mental suffering just as he may testify to his physica suffering. It was not shown that plaintiff's hand becam infected, or that the injury itself was such as might neces sitate amputation. While some courts have gone to the ex tent of holding that the mental suffering for which a recov ery may be had for a personal injury inflicted by the negli gence of another may include the mental worry, distres grief, and mortification which may be shown to exist be cause of the injury, the court knew of no case where th injured party has been permitted to magnify the damages b calling the attention of the jury to fears that were altogethe groundless and never materialized. In view of the size o the verdict, it was held that the admission of the evidenc was prejudicial error, and the judgment was reversed for new trial.

MEDICAL OPINION EVIDENCE AS TO PERSONAL INJURIES.

As a general rule a physician qualified as an expert ma testify as to the probable result of an injury; and the Mis souri Supreme Court holds, Gatz v. United Rys. Co., 25 S. W. 61, that the affirmative answer of a medical exper witness in a personal injury case to the question whethe the condition of the plaintiff's knee was likely to be perma nent did not invade the province of the jury and was no speculative. The same court, in Melly v. Railroad, 215 Mo 567, 114 S. W. 1013, held that the testimony of a physicia was admissible to the effect that plaintiff's injuries woul continue to grow worse and that the probabilities were tha they would be permanent; that such testimony was no conjectural, but proper as bearing on the question of dam ages.

PROOF OF CONTRIBUTORY NEGLIGENCE OF PATIENT

The Georgia Court of Appeals holds, Bryant v. Anderson 119 S. E. 920, that in a suit against a surgeon for damage for a personal injury alleged to have been caused by h malpractice, where the defense is that the injury wa caused by the plaintiff's negligence, and where the plainti makes out a prima facie case by showing that the injur was caused by want of due care, skill or diligence on th part of the defendant, and does not, in making out h case, show any negligence on his own part, the burden on the defendant to prove that negligence of the plainti caused or contributed to the injury.

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The Medical Treatment of Duodenal Ulcer*

With a Critical Review of Certain Remedies Employed

WALTER A. BASTEDO, M.D.,
New York.

Duodenal ulcer is not so serious a disease as gastric ulcer and the outcome of its treatment either medically or surgically is more often a satisfactory one. Nevertheless, until the ulcer is healed the menace of perforation, hemorrhage or slow extension is always present. Therefore, if the diagnosis is ulcer let us be unwilling to temporize in its treatment. It would seem almost as justifiable to treat pneumonia as an ordinary cold, or dysentery as a simple diarrhea, as to treat peptic ulcer by the methods employed for a simple functional digestive upset, or to attempt to treat an ulcer by medical means when obviously it requires surgery. Among several cases which have taught us this, we might cite two:

CASE I.—A very nervous man who had been put to bed for an ulcer cure by one of our best gastroenterologists became psychically so upset by his confinement that the physician allowed him to get up and go back to business. In consultation, as his symptoms had entirely subsided under the régime instituted, we sanctioned the procedure. On diet and treatment the man felt perfectly well, so that after four or five months he forgot his sickness and became completely careless in his eating and drinking. Then he had two or three hemorrhages in rapid succession and had to be transfused twice in order to save his life.

CASE II.—A man with penetrating ulcer of the duodenum as shown by x rays, consulted us and we advised surgery. He said, "My business is in such a state that if I leave it now I believe I shall go bankrupt." Under these circumstances we placed him on hyperacidity diet and medical measures which made him feel better than he had for years. After several months of faithfulness to the treatment and almost complete freedom from symptoms his old pain returned with violence, and did not yield to milk diet, sodium bicarbonate and magnesia as it had before. He consented to surgery on Tuesday of one week, arranged to enter the hospital on the following Monday, had a perforation on Thursday night, and was buried on the Monday, an emergency operation having been done. There is a great deal of evidence that some ulcers heal without any special ulcer treatment, but nowadays when we are asked, "Is there an ambulatory treatment for ulcer?" we reply, "Not by us."

In our opinion medical treatment promises to be successful in the majority of cases of duodenal ulcer. It is true that undoubtedly owing to wrong diagnosis some patients are cured medically when they never had ulcer. But we think that this is better for the patient than to discover the error through a surgical hole in the abdominal wall. After surgery, particularly where the ulcer is not excised, medical treatment is also indicated. There are many plans of treatment in use, almost all being modifications of the old French one of administering milk, cream and eggs in small amounts, frequently repeated, together with alkalies. In the hands of skilled practitioners the various plans seem to meet with equally good results, therefore one must not be dogmatic in regard to the merits of one's own particular method.

The objects of medical treatment are to relieve unpleasant symptoms and to provide conditions favorable to the healing of the ulcer while maintaining the patient's nutrition. These objects seem to be attained through rest, diet and certain other remedial measures. In a specific case antiluetic measures must also be instituted.

REST

This is secured by keeping the patient in bed for a period of three or four weeks, preferably in a hospital away from home and family. After this period we allow him to sit in a chair, twenty minutes the first day, and each day thereafter an increasing length of time for one or two weeks; then allow him to walk, increasing the distance each day, but always with the avoidance of even slight fatigue. Until the end of the sixth week or so the patient lies down after each feeding. The length of time before the patient is permitted to attend to his usual affairs is at least two months; the length of time before rules may be abolished is indefinite, but usually not less than a year. The reason for failure of cure is often enough failure to continue the treatment for a sufficient length of time.

Rest is to favor quiet and ease, to prevent body strains, to lessen the food requirement, and by the horizontal position to favor emptying the stomach

*Read before the New York Academy of Medicine, January 19, 1924.

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and to eliminate gravity drag on the duodenum and stomach. During the whole period a reasonable amount of mental calm favors the cure, and this is sought by light reading, radio apparatus, the exclusion of all but especially desired visitors, and sometimes, in the case of a business man, permitting him to talk business for a few minutes a day with someone from his office. During the bed period, we permit the patient to get up to empty the bowels, either using the bathroom if that adjoins the bedroom, or using a commode in the room. This not only promotes the bowel movements, but also keeps the patient's legs and body in better condition.

DIET

1. Meals are small to allow the stomach to contract, for this tends to lessen gastric hyperperistalsis and pylorospasm with their high prepyloric pressures and the development of organic acids and gas. It also lessens spasm in the duodenum directly associated with the ulcer.

2. Meals are frequent to satisfy the caloric needs of the patient and to forestall hunger pains.

3. Meals are increased by gradual additions, no sudden jumps into heavier diet being permitted.

4. The intervals between meals are lengthened as the complexity of the meals increases.

5. The food is bland, nonirritant, containing no coarse, gritty or fibrous particles, no alcohol, coffee, spices, seasoning, acids, fermented milks, fruit or excessive salt. Unlike Lenhartz, we prefer it not icecold.

In the beginning it seems to us there are no foods better than milk, eggs and cream; but at the outset it is desirable to prevent the normal change of milk to the solid form in the stomach through its coagulation by the rennet ferment. This we accomplish by twenty minutes of peptonization, though the same effect may be obtained by adding one or two grains of sodium citrate to each ounce of milk. After the first week this precaution is not usually taken.

ULCER DIET

If stomach permits, make milk feedings every hour, otherwise every one and one half or two hours. If at the regular time the stomach seems unready for the feeding skip that feeding. Allow water as desired in amounts up to four ounces. Rinse mouth with water after each feeding and allow a swallow of water. Peptonize milk for twenty minutes by the warm method, then quickly bring to boiling point, cool, and keep on ice. Serve food hot or cold as patient may prefer, but not icecold. If eggs are not acceptable substitute two ounces of cream for each egg.

First day: Peptonized milk, three ounces every hour from 8 a. m. to 9 p. m. and once in the night if patient is awake.

Second day: The same, but four ounces every hour.

Third day: One egg in each quart; four ounces every hour.

Fourth day: The same; five ounces every hour.

Fifth day: Two eggs in each quart; five ounces every hour.

Sixth and seventh days: Two eggs and two ounces of cream in each quart; five ounces every hour.

Eighth and ninth days: Plain milk, two eggs in each quart; six ounces every hour.

Tenth day: Plain milk, two eggs and two ounces of cream in each quart; six ounces every hour.

Eleventh day: The same, but at one o'clock, milk toast made with one full slice of toast, four ounces of hot milk and one ounce of cream. Make next feeding two hours later.

Twelfth day: The same, but for one evening feeding a saucer of junket, custard or farina with cream (or milk) and sugar. Make next feeding two hours later.

Thirteenth day: The same, but for the first or second feeding give saucer (four ounces) of oatmeal gruel or white cereal (arrowroot, cream of wheat, farina, hominy, rice), with cream (or milk) and sugar. Make next feeding two hours later.

Fourteenth day: The same, but at one o'clock two slices of toast with hot milk and cream. Next feeding two hours later.

Fifteenth day: The same, but for evening meal, one coddled or soft poached egg, one slice of toast and butter, and junket, custard, or farina with cream (or milk). One glass of milk or water to drink. Next feeding two hours later.

Sixteenth day to end of sixth week:

8 a.m.: Oatmeal gruel or white cereal, one poached, soft boiled or coddled egg, one slice of toast and butter, one glass of milk or cocoa made with milk.

10 a.m.: One glass of milk or milk and egg, or equal parts of milk and cream.

11 a.m.: Same.

1 p.m.: Minced chicken, creamed sweetbread or brain, or scraped cooked beef, one small baked potato with butter, one slice of bread or toast and butter, milk or water to drink. (In the fourth week may add small helping of soups as below.)

3 p.m.: A glass of milk, or milk and egg, or equal parts of milk and cream.

5 p.m.: Same.

7 p.m.: One soft poached egg on toast, or soft boiled egg with toast or zwiebach, and custard, farina, blanc mange, junket, plain rice pudding or boiled rice, with cream (or milk) and sugar.

9 p.m.: One glass of milk, or milk and egg with two plain crackers.

After six weeks:

Breakfast: Oatmeal gruel or white cereal, one or two poached or soft boiled eggs, toast or zwiebach, a glass of milk or cup of cocoa made with milk.

11 a.m.: A glass of milk and egg, or milk and cream.

Dinner: 1. Strained creamed soup or puree (not made from meat stock) of potato, peas, beans, asparagus, corn, celery or spinach.

2. Chicken, squab, lamb chop, beef steak, creamed sweetbread or brain. Meat to be free from fat or gristle and cooked by broiling, boiling or roasting.

3. Baked potato, plain or creamed macaroni or spaghetti, rice, strained peas, beans, spinach, squash or carrots, asparagus tips.

4. Bread, toast or zwiebach, with butter.

5. Milk or water to drink.

4 p.m.: A glass of milk and egg, or milk and cream.

Supper: One egg, toast, zwiebach, or bread with butter, and a dessert (custard, farina, cornstarch, blanc mange, junket, vanilla ice cream, milk and cereal puddings, rice, tapioca, sago).

9 p.m.: A glass of milk, or milk and cream with crackers.

No salt, pepper or other condiment to be served with the food.

There is some evidence to indicate that milk, cream and eggs do not lessen acidity, but it is our belief that it is not by the reduction of acidity that the cure is obtained. If milk causes diarrhea, flatulence, nausea or a feeling of heaviness in the stomach, substitute dried milk, which is frequently well borne by the milk sensitive types. If a milk sourness supervenes lavage the stomach in midafternoon and give a milk free diet for two or three days. Such might include cereal with butter, potato, spaghetti, wetted toast, soft cooked egg and perhaps shredded chicken or scraped cooked beef. As a rule milk sourness means either an unconquerable pyloric obstruction or marked gastric atony. Frequently we have noted stomach discomfort or distention when first feeding cereals, and in this case we omit the cereal for several days.

MEDICINAL AGENTS

In the main these consist of antacids, demulcents, such as bismuth and oil, and laxatives.

Antacids.—Smithies has laid great stress on the frequency with which ulcer occurs without high gastric acidity figures; yet whether the acidities are high or low it is almost universally agreed that pain in ulcer cases may in most instances be overcome or modified by alkalies. In 1917 Dragstedt found that experimental ulcers exposed to normal gastric juice required no longer time for healing and displayed no more tendency to chronicity than did similar lesions in the absence of gastric juice. If the alkalies do not favor healing they should not be administered *ad lib.*, hit or miss. For what purpose then do we employ them? The answer is to overcome or to forestall pain or discomfort. Indeed they are employed for pain or discomfort of almost any kind or degree, the pain of distention, the pain of contraction, pain when the stomach is full, pain when the stomach is empty, pain coming early after eating and pain coming late. They may be employed during the digestive period or during the socalled empty period.

For a proper understanding of this action of alkalies in overcoming pain we must know the origin of the pain; and since the most noticeable pain in ulcer cases is the socalled hunger pain or empty pain we might first inquire as to its causes.

1. *Is the cause the irritation of food?* As this pain usually comes after the food has all passed and is promptly relieved by taking food this would seem unlikely; moreover it may be abolished by what we normally consider irritants, for example, lemonade, orange juice, dilute hydrochloric acid, chocolate soda water, whiskey and beer, and we have had patients who habitually obtained relief from lime drops. Moreover, these pains are not necessarily empty pains, for sometimes in pyloric obstruction cases they occur when there is still plenty of food in the stomach, in which case also they may be relieved by alkalies, other liquids or food.

2. *Is the cause hyperacidity?* It has been shown that at the outset of these pains the acid titre has remained practically unchanged. In one case before the pain Hardt found the acid figures 30 free and 50 total, and during the pain period 35 free and 60 total. He relieved the pains by alkalies, and an hour and a half later when there was no pain found the free acid 65 and total 75. Moreover, as pointed out many years ago by Einhorn, hunger pains occur in cases with complete gastric achylia.

3. *Is the cause pylorospasm?* As shown by the röntgen ray pyloric spasm is frequently present in both gastric and duodenal ulcer without any pain at all, indeed pain at such times is conspicuous by its absence. Also during palpation actual hard contraction of the pylorus may be felt by the examiner without any pain being experienced by the patient.

4. *Is the cause excessive motor activity?* This is greatest during the digestive period when the hunger pains are absent. Moreover, a most noticeable phenomenon is the prompt relief by food which regularly sets up active peristalsis. Homans has shown that intense gastric activity can occur in ulcer patients without giving rise to pain and that the hunger pains are not associated with any recognizable action of the gastric walls.

5. *Is the cause hunger contractions?* These become manifest about the usual time for hunger pains, that is, at the end of the digestive period; and they are checked by food, alkalies, beer, wine and dilutions of hydrochloric acid. Therefore it would seem as if these might be the cause of hunger pains. Yet Crohn and Wilensky in more than three fifths of a group of ulcer cases studied at Mt. Sinai Hospital found both tone and hunger contractions weaker than normal, and remarked that as a rule patients with good and frequent hunger contractions proved at operation to be devoid of an organic lesion. They did not report on the relation of pain to hunger contractions, yet found that in ulcer cases marked hunger contractions were more frequently absent than present. Homans reports an interesting case of duodenal ulcer without adhesions, in which during a period of pain eight hours after food there were low gastric tonus and absence of hunger contractions. When the patient turned on the left side the pain ceased and the hunger contractions began. When he turned on the right side the pain recurred and the hunger contractions ceased.

6. *Is the cause hyperesthesia?* Dundon after a series of experimental ulcers in dogs drew the conclusion that hunger pains in ulcer cases are not due to hunger contractions *per se* but to hyperexcitability of the sensory nerves in the visceral wall. Carlson has a similar idea, attributing ulcer pains to the tension of excessive contractions or to that of normal contractions on hyperexcitable pain nerves. Yet we might ask, if the pains are due to a heightened sensitiveness to muscular contractions, why are they not present during the digestive period when hyperperistalsis is evident?

In the light of all these facts we must feel that the cause of the hunger pains of ulcer is not satisfactorily established, and that as a consequence we do not know how alkalies act in checking them.

Digestive pain, as distinguished from hunger pain, is most frequently due to distention, probably secondary to pylorospasm in some instances, and is also frequently relieved by alkalies. According to a number of investigators, noteworthy among whom is Crohn, alkalies given before meals or in the early digestive period tend to induce a more than compensatory high acidity, and sodium bicarbonate more than magnesia. In fact from the experimental work one would almost be persuaded to confine one's prescription for alkalies in the digestive period to subacidity cases, were it not that large clinical experience suggests otherwise.

Of one thing we can feel satisfied, that is, that in ulcer cases the relief of hunger pains and distention pains by alkalies is not due merely to acid neutralization, and their relative values cannot be determined by their power to neutralize acids. The alkalies most commonly employed are sodium bicarbonate, light and heavy magnesia, milk of magnesia and chalk. There are a number of ulcer cases which do admirably with no alkali at all, and there are many that obtain great comfort from the alkalies. In the method of frequent feeding it would seem entirely superfluous to give them after each feeding. Our own practice is to administer about sixty grains of sodium bicarbonate, one level teaspoonful, in a glass of water the first thing in the morning, and milk

of magnesia half an ounce to one ounce the last thing at night, the amount of the latter being determined by the need of the bowels. We do not give alkalies during the day unless the diet fails to control the pains, in which case we give sodium bicarbonate or a mixture of sodium bicarbonate and light magnesium oxide. We believe it unwise to keep the urine continuously alkaline, and if we find it so, lessen our alkalies regardless of symptoms. Should the pain come in the night we have a glass of sodium bicarbonate solution kept alongside the bed to be taken at once. We do not find any disadvantage from the liberation of carbon dioxide from sodium bicarbonate, in fact, we feel that not infrequently the carminative action of this gas is advantageous. Indeed we sometimes add peppermint to our alkali for its carminative effect. Almost never do we employ calcium carbonate, as we find constipation the rule.

Bismuth.—We occasionally employ bismuth, preferring, on theoretical grounds, the amorphous bismuth subcarbonate to the hard crystalline bismuth subnitrate, though practically there is no good evidence of any noticeable difference in their effects. Years ago when performing pharmacological experiments with dogs we would now and again give a meal mixed with carmine stained bismuth subnitrate. On killing the animal one, two or three hours later we regularly found the stomach and the greater part of the small intestine more or less uniformly coated with a light flocculent protective bismuth layer, but never in any case did we find any bismuth at all clinging to the wall of the duodenum from the pylorus to about the papilla of Vater. This region was always swept clean. So we think that bismuth salts are more adapted to the treatment of gastric than duodenal ulcer, though possibly their value in lessening gastric hypersecretion may justify their use even in duodenal ulcer.

Olive oil.—This has been much used by the German school apparently with good results. We do not employ it.

Laxatives.—During the first week or two we administer one half or one ounce of milk of magnesia at bedtime, and an enema each morning if the bowels fail to move by ten o'clock. After this period, if the magnesia movements are unphysiological, as is so frequently the case, we shift to nightly doses of cascara, phenolphthalein or an aloin, belladonna and strychnine pill, if required. Once a week for thorough cleansing we give a dose of castor oil, or calomel followed the next morning by two ounces of milk of magnesia. The diet lacks roughage and a cure cannot be expected unless the bowels are kept adequately working.

Iron.—If the anemia is severe we use transfusion. If it is only moderate we may give hypodermics of iron cacodylate or soluble iron citrate, or small mouth doses of some bland iron preparation such as ovoferrin. As a rule we do not use any iron medication.

Atropine and belladonna.—These drugs seem to be employed extensively with the idea of counteracting hypersecretion and muscular spasm. We have been severely attacked for our statement on several occasions that "in the doses usually employed or permissible for any length of time atropine and belladonna are wholly without effect on the secretory or the motor functions of the stomach." In a recent study of human cases Lockwood and Chamberlin of Detroit, using the fractional method of stomach analysis, found it impossible in doses compatible with safety to demonstrate the marked action of atropine obtainable on the lower animals. Their experiments and results were as follows:

1. One fiftieth of a grain of atropine sulphate in one ounce of water through the tube just preceding the Ewald meal—two pyloric ulcer cases and a normal: effect very slight if any.

2. One fiftieth grain by hypodermic injection just before the meal—two pyloric ulcer cases and one duodenal; moderate reduction in acidity with slight retardation in emptying.

3. One fiftieth grain by hypodermic injection one hour preceding the meal—nine psychopathic subjects free from digestive diseases; moderate reduction in acidity and little or no change in emptying time.

4. One one hundredth grain by hypodermic seven hours before and again immediately before the meal—one ulcer case and two normals; moderate reduction in acidity, emptying time virtually the same.

5. One c.c. tincture of belladonna four times daily for three days—three nondigestive cases; moderate reduction of acidity. All showed symptoms of belladonna poisoning. One c.c. of the tincture of belladonna contains 0.3 mg. (1/225 grain) of total alkaloids.

6. Patient with prepyloric ulcer and moderate obstruction, on feedings of three ounces of ten per cent. cream every two hours. Three experiments: *a.* One fiftieth grain atropine sulphate in half an ounce of water through the tube just before the cream. Same dose repeated with the next cream feeding two hours later. *b.* After two days 1/100 grain hypodermically with the cream, repeated two hours later. *c.* After two more days 1/50 grain by hypodermic with the cream, repeated two hours later. A study of the curves obtained shows that after cream alone and when cream alone was given two hours after the last dose of atropine the acidity distinctly rose, while after the cream and atropine the drop in acidity was marked for the first hour in each case but rose high again by the end of the second hour. After the last experiment the patient had dilated pupils and a very dry throat.

Crohn's experiments of several years ago were even more unfavorable to atropine. The experiences of röntgenologists as expressed to me verbally further indicate that it is only occasionally that ulcer spasm is allayed by a hypodermic of one fiftieth grain of atropine sulphate.

Recently, for painful gastrospasm in ulcer one of our Western colleagues has strongly advocated five to fifteen drops of the tincture of belladonna three to six times a day. The largest of these doses, fifteen drops, represents at the outside seven and a half minims (still less if dropped from the average medicine dropper) which contains of total alkaloids one four hundred and fiftieth grain. This amount would also be represented by three sixteenths grain of the extract of belladonna (the usual dose prescribed is one tenth or one eighth grain). Does anyone here think for a moment that one four hundred and fiftieth grain or much less of belladonna alkaloids is going to overcome painful spasm in an ulcer case? As a matter of fact the doses which

will produce effects are poisonous doses. We therefore repeat our opinion that *"in the dose usually employed or permissible for any length of time* atropine and belladonna are wholly without effect on the secretory and motor functions of the stomach." The drug should be excluded from our plan of treatment, for the effect of belladonna in an ulcer case is purely psychic (in the physician's mind).

Distention usually means pylorospasm with gastric fermentation. Its beginnings should be watched for by frequent percussion of the stomach. It may be relieved temporarily and sometimes permanently by heat to the abdomen, sodium bicarbonate and peppermint, lavage or a cathartic. In a number of cases we have had distention on beginning cereals in the diet, so that for a day or two it has been necessary to feed the patient less often and to omit cereals, or even to go back several days in the diet scheme. But not infrequently on examination the gas and discomfort complained of are found to be colonic and not gastric, when relief may be procured by an enema or by a daily colon irrigation.

Nausea or vomiting is unusual. That from intolerance to food arouses suspicion of gastric ulcer. That from hyperacidity is met by large doses of alkalies. That from retention means pyloric obstruction. That of sour milk requires lavage and a milk free diet, and perhaps a revision of our judgment as to the continuance of the medical treatment.

Night pain is treated by a dose of sodium bicarbonate or magnesia and sodium bicarbonate. If it occurs every night we have the patient awakened shortly before the usual time for its appearance and given either a drink of milk or a dose of alkali, or sometimes we exclude food after 8 p. m. and give codeine one half grain at 9 p. m. This is rarely necessary beyond three or four nights.

Tobacco is not favored, but for obvious psychic reasons is allowed in some cases.

Focal infection is sought in every case and tonsils, teeth and other infectious foci attended to.

SUMMARY

Our ulcer treatment includes rest in bed for three or four weeks, preferably in an institution away from home and the family, few visitors, diversion, permission to visit the toilet, and a diet beginning with peptonized milk and the gradual addition of eggs, cream, toast, cereal, custard, farina, potato, milk and cereal puddings, vegetable strained soups, vegetable purees, certain strained vegetables and ice cream. The meals are small and frequent and not given ice cold. It is our belief that it is not by the direct neutralization of acid that the cure is obtained, yet alkalies are administered in moderation, as sodium bicarbonate and milk of magnesia, or as a mixed powder of sodium bicarbonate and light magnesium oxide, with or without peppermint. We do not employ olive oil or belladonna, and never use lavage as a routine. Duodenal feeding we consider an unnecessary trouble, and rectal feeding superfluous. The treatment is assumed to take a long time and no dietary indiscretions are permitted under at least a year. Under this régime most patients lose their pain and discomforts in one or two days and enjoy an uneventful freedom from symptoms during the treatment and afterwards. Those that do not, if their symptoms are not readily amenable to treatment, are transferred to the surgeon.

33 East Sixty-eighth Street.

A Case of True Pneumotyphus with Submaxillary Abscess

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The rarity of cases of true pneumotyphus warrants the report of a rather exceptional case observed during the recent epidemic of typhoid fever in the town of Woodland, Me. The case was further complicated by the development of a large submaxillary abscess.

REPORT OF CASE

Case.—J. B., female, aged seven, was seen first on July 28th. Her past history was unimportant. Present illness began five days previously, with sudden onset, a chill, pain in right side of chest, cough, and fever. The patient had not received antityphoid vaccine. Temperature ranged from 102.4° to 104.2°; pulse 110 to 115; respirations 25 to 50. Face was flushed, eyes bright, lips dry, breathing labored and painful, and the patient appeared very nervous. Respiratory movements were markedly restricted on the right side. The patient appeared to be very weak. There was marked dullness over the right lung up to the level of the midscapular region behind. The breath sounds were harsh, with a few fine râles at the end of inspiration; bronchial breathing over the entire consolidated area. There was no expectoration. Blood: leucocytes, 14,500; differential, polymorphonuclear, 78 per cent.; lymphocytes, 18 per cent.; endothelials, 3 per cent.; eosinophiles, 0.5 per cent. The urine was negative.

A provisional diagnosis of lobar pneumonia was made, but owing to the fact that we were in the midst of a typhoid epidemic a Widal test was taken, which was positive, as was also the blood culture, and a diagnosis of typhoid fever was made. The spleen was not enlarged.

In the latter part of the second week a tense, hard swelling appeared in the right submaxillary region; this caused considerable pain and suppurated. It was necessary to open the abscess and about thirty c. c. of thick creamy pus was obtained. Stained smears of the material showed many pneumococci, some fibrin, and many pus cells. The pneumococci were not typed, but were judged to be consistent with type III. The patient obtained immediate and great

relief from the operation, the breathing was much easier, the temperature dropped from 103.2° to 101°, and her color was much better.

The right lung began to clear on the tenth day, although the temperature remained high until the end of the fourth week and fell by lysis. The patient made an uneventful recovery, the lung being absolutely clear at the end of the sixth week and the stool negative for Bacillus typhosus.

The treatment was dietetic and supportive, the Shattuck enteric diet being used.

COMMENT

In a case such as this it is very difficult to say whether there is typhoid fever with early disease of the lungs or a usual lobar pneumonia followed by typhoid fever. It was especially difficult to determine in this instance, as we were in the midst of an epidemic.

This case is similar to that reported by Herrman (1), our case being further complicated by unilateral submaxillary abscess. Osler (2) reports only three cases in his series in which lobar pneumonia was present in the beginning of typhoid fever, and but four cases with submaxillary abscess, in three of which the patient died.

Klein and Torrey (3) have reported a case of lobar pneumonia where the fever persisted after the lungs had cleared. The Widal was positive for paratyphosus bacillus.

Of the fifty-one cases of typhoid fever in the Woodland epidemic this was the only one beginning with typical lobar pneumonia and in which a submaxillary abscess developed.

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Bronchitis and Its Treatment*

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In England and Wales during 1922 the death rate to the million of population from the four principal diseases was as follows: Cancer, 1,229; tuberculosis, 1,121; bronchitis, 1,073; pneumonia, 1,073. Since 1921 capillary bronchitis has been placed under the head of bronchopneumonia, otherwise bronchitis would have come more closely to tuberculosis. If we were dealing only with the adult population then the incidence and death rate from cancer would be a long way ahead of all other diseases; no wonder that we have a thriving cancer industry, and are a long way from the solution of the problem.

Chronic bronchitis is a long drawn out disease which causes much misery and suffering, both directly and from its complications; consequently from the point of view of the public its prevention is of much more importance than its treatment. Sir Douglas Powell pertinently says that, "It is impossible truly to comprehend the manifold incidents and conditions of such diseases as asthma, emphysema, pleuritic effusion, pneumothorax, and many other chest maladies without a working knowledge of the static and dynamic conditions of respiration in health." I have dealt so fully on many occasions with the physics of the chest in the pages of the *British Medical Journal,* the *Lancet,* the *Medical Press and Circular, American Medicine,* and the New York Medical Journal that it will be quite unnecessary to enter minutely into the subject here, but I hope to point out some ultraphysical facts which concern those in health as well as those suffering from bronchitis.

The main objects of respiration are to oxygenate the blood and to carry away the effete carbonic acid, and we shall therefore take a brief glance at the anatomy and physiology of the lungs. Sir Douglas Powell says, "Down to the diameter of one mm. the bronchial divisions are possessed of cartilages and a muscular coat, are lined by a ciliated epithelium, and are furnished with mucous glands. The arterial supply is thus far derived from the bronchial artery, the capillaries of which terminate in the bronchial veins, forming a part, therefore, of the systemic circulation. Below one mm. the bronchioles have neither cartilage nor mucous glands, but their muscular coat and the elastic fibres persist, and ciliated epithelium still lines the tube, although soon to give place to flattened nonciliated cells. The arterial supply, still derived from the bronchial artery, terminates, however, in the pulmonary venous capillaries, and forms, therefore, a part of the pulmonary circulation" (1). The alveoli, about 0.25 mm. in diameter, are composed mainly of a framework of fine fibrous tissue with numerous elastic fibres, they are lined by delicate flattened epithelium, and are surrounded by a network of capillaries.

It is a wise provision in Nature that the nutritive vessels of the lungs belong to the systemic system, otherwise nearly every case of red and grey hepatization would be followed by gangrene of the lung. In cases of pulmonary apoplexy or thrombosis the blood effusion is into the alveoli and bronchioles of certain lobules, as first pointed out by the late D. J. Hamilton (2), and not a plug in a branch of the pulmonary artery.

The exchange of gases takes place in the alveoli whether by the ordinary process of diffusion, or this augmented, as suggested by Haldane, Douglas, and others, by a secretory activity of the epithelium lining the alveoli. As the carbonic acid tension in the blood is always represented by that in the alveoli

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t is customary in cases of acidosis and disturbances n the basic metabolism to examine the alveolar air. Various elaborate processes and instruments have been devised for the purpose. You can arrive at a clinical conclusion much more easily by making the patient take two or three deep respirations, and then hold the breath as long as possible; if he can stop breathing for forty seconds you need not trouble further about his carbonic acid tension. In estimating he respiratory capacity of an individual a spirometer s of much more value than a stethoscope.

ETIOLOGY AND PREVENTION OF BRONCHITIS

A chill due to exposure was formerly looked upon as the forerunner of many ailments, and consequently was treated with the respect due to a progenitor, but n modern days this agent has been supplanted by microorganisms, and the chill is placed in a subservient place as a mere predisposing factor. However, any agent which prepares the soil for the ubiquitous microbe is a factor which should not be neglected. It is with the object of prevention and, when not prevented, with the object of obviating the dire effects of this insidious malady that I shall approach the subject.

Heredity plays a very important part. We owe not only our health and intelligence, but too often our tendency to disease to our parents; as Professor Arthur Thompson says, what children die of is their parents. Those who have a hereditary tendency o any catarrhal or arthritic condition should be very careful in their mode of life, and pay special attention to the state of their digestive organs. Any hereditary tendency is easily accentuated by bad hygienic surroundings.

The modern conception that bronchitis is an infective disease due to a multitude of organisms rather han a specific one, or perhaps to some filter passing germ, has modified the former methods of treatment —poultices and expectorant mixtures have given place to vaccines, autogenous and blunderbusses; still we are no nearer a solution of the problem of prevention and cure of the malady.

Specialists dealing with the nose, throat, sinuses, onsils, and teeth say that bronchitis is merely a econdary disease, due to the infection travelling lownwards. This unreasoning attitude is being carried too far; all the pathogenic flora which inhabit he upper air passages are common in warm, dry limates, but bronchitis is rare. The pneumococci affect the alveoli readily enough but they do not rest n their passage down the bronchi; enteric fever is requently associated with bronchitis, but the Bacillus yphosus passes from the blood into the alveoli. With he exception of certain specialists every one recognizes a primary bronchitis and as every one is a specialist on that disease, so in vain will throat and nose nen try to snatch bronchitis from the purview of he general practitioner. You can easily retaliate by nvading their territory; adenoids, tonsillitis, pyorhea, etc., are all easily prevented.

A chill due to exposure is undoubtedly an etiological factor in the causation of bronchitis, but you must clearly understand what you mean by a chill; a cold, dry, still atmosphere much below the freezing point cures the bronchial catarrh often associated with tuberculous disease of the lungs. It is a cold wind with a moist atmosphere which chills you to the bone, and finds out the weak spots in your economy. When a person is feverish or well supplied with internal fuel he can stand much external cold. There are on record cases of typhus fever in which the patients in their delirium escaped from the hospital, and after living for some days in the open without food or clothing recovered. It is quite another matter when the internal temperature is subnormal, and the vital powers depressed from any cause.

When the vital resistance is lowered, and especially during sleep when the controlling influence of the nervous system is partially suspended, the individual is much more liable to the catarrhal effects of cold, hence bronchitis is much more frequent and fatal in the very young and the very old than in adults. In this cold, damp climate many aged persons contract a fatal bronchitis in bed. I have seen a patient suffering from bronchitis, with edema of the lungs and the socalled death rattle in his throat, rescued from death by rapidly raising the temperature of his bedroom with a blazing fire.

Dry air is a bad conductor of heat, hence a dry, still atmosphere, no matter how cold it may be, cannot do much damage to the bronchial tubes. Of course, the dryness of the atmosphere is a relative term, as the amount of watery vapor which it can hold will largely depend on the temperature; if, therefore, a cold atmosphere is not to do any harm, the amount of moisture which it holds should be a long way below the saturation point. The more saturated the atmosphere the less it will take up of the watery exhalations from the lungs, and there may be even a condensation in the bronchial tubes, hence the supersaturated atmosphere of a greenhouse soon becomes almost suffocative, while you can breathe freely in the higher temperature of a Turkish bath. It is, therefore, the excess of moisture rather than the coldness of the atmosphere which works mischief, yet, strange to say, some physicians still continue to use the bronchitis kettle.

In the cold dry climate of Canada and Switzerland bronchitis is much less common than in the moist and comparatively mild climate of this country. With nasal breathing there is not much danger of any degree of dry cold damaging the bronchial tubes. I have seen myself perspiring freely while climbing in the Alps when the temperature was minus 30° C. There can be no doubt that sudden variations in temperature do injure the body; the intense cold of liquid air will as effectively kill the part with which it is kept in contact, as a red hot poker. What we have to do is to protect the body from the injurious influences of the abstraction of heat by a cold moist atmosphere, especially when in rapid motion.

The natural protection arises from the reflex action of the nervous system preventing any rapid loss of heat, but the nervous system is not always on the alert, and its regulative mechanism is not always sufficient to meet the contingencies arising from the sudden changes in, what a friend of mine calls, "this beastly climate." In the young and aged much greater protection than that afforded by the nervous system is required.

Rossbach (3), after the application of cold to the skin, saw the bloodvessels of the trachea contract reflexly after one to two minutes; this was soon fol-

lowed by a venous hyperemia, and an increased secretion of mucus. Personally I cannot place my bare foot on a cold stone without bringing on a sharp attack of sneezing, often followed by watery secretion from the nose, and massage of one foot brings on a sharp pain about the stylomastoid foramen of the opposite side of the body. I have no doubt, therefore, that the decussation of the sensory nerves in my spinal cord is quite normal. I adopt a hardening process by a cold douche every morning summer and winter, and the nearer the temperature of the water to the freezing point the better. I cannot afford to be ill, and I have no wish to contract bronchitis with all its concomitant evils. The hardening process is excellent when judiciously carried out, otherwise it may be a rapid Darwinian method of getting rid of the unfit; but you have to deal with the fit and the unfit, chiefly the latter in this C3 population, so be careful in the application of your methods of prevention. Apart from any respiratory effects long continued cold is apt to give rise to local asphyxia and enlargement of the hands.

In studying the causes of colds the electrical condition of the atmosphere and of the individual is not usually taken into sufficient account. Lord Frederick Hamilton (4) has placed it on record that often in Canada in the winter the air is so dry that you can sufficiently charge yourself with electricity by rubbing your feet along the carpet to be able to light the gas by the sparks from the tips of your fingers. In such an atmosphere you have a dry skin, the electrical condition of your body is good, and you do not contract bronchitis. In this country you should be careful not to have your electricity leaking out through damp boots more quickly than it is generated.

Concussion between the fourth and fifth cervical, and on the second dorsal vertebræ, gives rapid relief in bronchial asthma by relaxing the bronchial spasm, and allowing the lung to contract, but this requires a little care in manipulation as the easiest position to concuss is with the head bent forwards, but this is the worst position for the patient as it interferes with the free entrance of air. It is easy to find the hollow above the fifth cervical spine, and the method which I adopt is to allow the patient to hold his head up, place a large cork about one inch in diameter over the interspace, and it also impinges on the fourth and fifth spines, give the upper end of the cork thirty gentle taps with a small mallet about an ounce and a half in weight, then give thirty taps over the second dorsal spine; after a minute repeat the series, again wait a minute and repeat the series a third time; this if properly carried out should give immediate relief. The lung reflex of dilatation can be readliy effected by friction, and by concussion of the third to the eighth dorsal spines. It is useful in atelectasis and in congestion of the lungs, but in asthma and bronchitis it is more a question of getting the air out of the lungs than of getting it in.

When cold has damaged the mucous membrane and caused some shedding of the epithelium of the bronchi, the inflammatory reaction is readily maintained by the numerous microorganisms which infect the upper air pasages, and by dust, hence the necessity for a clean mouth and nose and a pure atmosphere. The streptococci, pneumococci, staphylococci, the influenza and diphtheritic bacilli, the Micrococcus catarrhalis, and numerous other pathogenic bacteri are often active on the mucous membrane. Measle are usually associated with bronchial catarrh. In th majority of cases of enteric fever the Bacillus typho sus find its way into the alveoli and bronchioles, an sets up a low form of congestive bronchitis especiall in the lower and posterior aspects of the lungs. Th bronchial mucous membrane, when intact, is not good culture field for microorganism, which ar brushed out by the ciliated epithelium; at any rat it is chiefly the minute divisions and alveoli which ar attacked by the tubercle bacilli, the pneumococci, an other organisms.

Various irritating dusts set up and maintain in flammatory reaction, and during the war we had large experience of the destructive effects of poison ous gases on the bronchial mucous membrane.

Gout and other constitutional disturbances ar credited with the production of bronchitis, but suc are not likely to lead to the usual type of chroni bronchitis. In mitral stenosis there is overloadin of the pulmonary circuit, and we frequently get congestive bronchitis affecting the alveoli, infundibulæ and small bronchioles, the blood supply of which belongs to the pulmonary circulation, but in the early stages the bronchi escape as their circulation belong to the systemic system, and the venous blood is returned by the azygos vein to the right side of the heart. In chronic kidney disease acute pulmonary edema is not at all uncommon, but a true bronchiti is rather rare.

Arbuthnot Lane thinks that most of the ills t which flesh is heir are due to the absorption of intestinal toxins, and bronchitis may be included i this list, as the breath of some people suffering fro intestinal stasis is most offensive. Some surgeon and anesthetists seem to become partially immune t ether, but they persist, perhaps unconsciously, i disturbing the more refined sensibility of thei friends. Chronic alcoholism is a common cause o chronic bronchitis, but it does not act as an irritan in its excretion otherwise it would be the alveol which would be primarily affected. It causes a vaso-motor paresis of the bronchial arteries so the bronchi, trachea, larynx and throat are first involved a these organs are supplied by the systemic bloodvessels. Alcoholic bronchitis is an active rather than a passive hyperemia, which by inducing cough leads on to emphysema. Tobacco tends to raise the blood pressure, and there is also the direct irritation of the smoke which maintains a chronic cough, the forerunner of emphysema.

In carbolic acid poisoning, where the irritation arises during excretion, we get a capillary bronchitis or congestive pneumonia.

THE RESULTS OF BRONCHITIS.

Vesicular emphysema is one of the worst results of chronic bronchitis. During coughing the intrapulmonary pressure is raised often 100 mm. of mercury above that of the atmosphere, this subjects to a great strain the portions of the lungs which are not well supported, such as the apices, the margins, and the bases. In the Valsalva experiment the intrathoracic pressure may be so great as to prevent any blood entering the chest, and hence, after a few beats of the heart, there may be so little blood pass-

ng through the lungs that the pulse disappears at the wrist. This experiment is too short to do much mischief.

In ordinary breathing the negative pressure in the chest is only about seven to ten mm. of mercury, but in aiding the circulation this is a constant force which in deep breathing may be readily augmented to about thirty mm. of mercury. In Müller's experiment I have often produced in my own chest a negative pressure of eighty mm. of mercury, and in Valsalva's experiment a positive pressure of 100 mm. of mercury. It is only with healthy lungs that these pressures can be established, and such can do no harm, though I have often had difficulty in persuading students to that effect. Healthy hearts and lungs do not cease working on slight provocation.

ELASTICITY OF LUNGS

The elasticity of even healthy lungs is not great, but it is quite sufficient for all the purposes it is called upon to perform. In fact, I can quite see that if it were much greater there would be a constant danger of producing pulmonary collapse.

In my Bradshaw lecture I showed that in exhausting diseases, where there was not much demand for oxygen, even a whole lung might collapse. The first experiments on the elasticity of the lungs were carried out by Carson of Liverpool at the beginning of last century. He and Robert Bickersteth were also the first to produce pneumothorax in the treatment of phthisis.

In advanced emphysema the chest is filled to its utmost capacity, the elasticity of the lungs is lost, the recoil of the chest walls, and with it the negative intrathoracic pressure disappears. Hence the blood has to be driven into the chest by the left ventricle, and carried through the lungs by the hypertrophied right ventricle. With the abolition of the elasticity of the lungs their free play is lessened or abolished, and the vital capacity which then chiefly depends on the diaphragm may fall to a fourth or less of the normal.

You can thus see that every attack of bronchitis leaves in its trail a gradual lessening of the function of the lungs, and renders the vital resistance less and less to every acute illness.

Asthmatics and bronchitics try to enlarge the chest to get air in, but if they were only taught to drive out a little of that already in there would be no difficulty in inspiring a little fresh air to replace that displaced. In bronchitis and more especially in asthma the difficulty is not in inspiring, but in expiring.

Rigid chest walls lessen the free movement of the lungs, aggravate the mischief and increase the emphysema. If you wish to keep your lungs healthy, and free from emphysema, you must keep your chest walls pliant, and give your lungs plenty of exercise; the more their elasticity is exercised the longer it will last. Costal breathing is much more effective than diaphragmatic. If people were only taught to breathe with the thorax, Nature would look after the diaphragm. The lesson to be learned is keep your thorax moving and for this purpose there is no better form of respiratory gymnastics than hill climbing. The free movement of the chest walls lessens the liability to rigidity of the costal cartilages, but if there is too much lime in the system it is also well to use decalcifying agents.

TREATMENT OF BRONCHITIS.

A large number of cases of acute bronchitis could be aborted or cut short by a clear recognition of the conditions with which you have to deal, and their prompt and energetic treatment. When a person after a severe chill has some distress in breathing he should have a warm mustard bath, be put to bed in a warm room, and if he still feels chilly have a glass of hot punch. A conscientious teetotaller can have a bowl of hot gruel, but as a rule teetotallers do not object to punch so long as it is prescribed as a medicine—the only danger is that they may be getting a chill too often. After this they should have no food for twenty-four hours, but may have plenty of hot water. He can have a Dover's powder, or Sir Archdall Reid's universal panacea of Dover's powder with aspirin and phenacetin. The following morning he should have a saline purge and then remain in bed for two or three days on a starvation diet.

Unfortunately, a medical man does not always get the opportunity of adopting this prompt treatment. A not infrequent sequel is as follows: The person after a severe chill treats it lightly as he thinks he has often done before, goes home, tries to warm himself, attempts a heavy dinner or a late supper for which he has no appetite, goes to bed, passes a restless night, dreams of the deluge or some personal catastrophe, wakes up with a violent palpitation of the heart, and is afraid to go to sleep again for fear of a recurrence of the dream which invariably takes place. The following morning he is exhausted and feeling very ill, he sends for the doctor who correctly diagnoses the case as congestion of the lungs, and as there is little or no rise of temperature he hesitates to use the word pneumonia. The following day he is still worse, bubbling râles are heard all over lungs, a consultant is called in who pronounces the ominous word bronchopneumonia, but assures the relatives that although the case is serious it is not by any means hopeless. The consultant may be tempted to prescribe an expectorant mixture with iodide of potassium, and perhaps a vaccine; the fate of the patient is then sealed, and he dies about the third day from acute suffocative edema of the lungs, or if you like, capillary bronchitis, though that name will not now suit the Registrar General.

The pneumococcus is not such a virulent organism as to kill in a couple of days, even the pneumonic plague would scarcely act so rapidly. As a matter of fact, the pneumococci play a small part in these cases, and the pneumococcal vaccine is of no use.

In these cases where the lungs are waterlogged the action of the sympathetic is very defective, and that of the vagus too great, hence the patient should have an intravenous injection of one fiftieth grain of atropine and five to ten minims of adrenalin solution (one in 1000), in normal saline every two hours until the danger is past. You may make the patient very uncomfortable with the atropine, but there is not much risk of poisoning him. In these cases there is practically always a deficiency of free calcium ions in the blood, hence two or three grains of soluble hypophosphite of calcium should be added to each injection, and a liberal supply given by the mouth—though you cannot be sure of its absorption.

The atmosphere should be warm, about 70°F., and as dry as possible—large amounts of dried calcium chloride, or strong sulphuric acid should be placed in soup plates about the room to absorb the moisture from the atmosphere. There is no need for food, and the quantity of fluid should only be sufficient to moisten the lips and mouth. Some men, who ought to know better, still recommend bloodletting in these cases in order, as they foolishly imagine, to relieve the right side of the heart, but it only removes blood from the systemic circulation and hastens the end.

Chronic bronchitis may follow an acute attack, but this is not the usual course; you are more likely to get many acute attacks during a chronic course. We have said a good deal about the prevention of this disease, and I now merely wish to emphasize these points. Every person with a liability to bronchitis should forswear the use of alcohol in all its forms. It is a frequent cause of the disease in the chronic form, and its regular use is of no benefit in the treatment.

These patients should be hardened and protected against the injurious influence of cold, damp, dust, microorganisms, irritating gases, etc. A pure, dry atmosphere is the best, but if the patient be not particularly vigorous, or have a low vital capacity then the atmosphere should be warm and dry, and the place at an elevation not greater than two or three thousand feet above the sea level. In fact, this is a disease for millionaires, but the ordinary mortal who cannot move about with the swallow, and it is with such that you have mostly to deal, should avoid contracting chronic bronchitis. It is a very troublesome, uncomfortable and long drawn out disease. I have before pointed out the necessity of keeping warm, dry feet, the clothing should be warm but not such as to produce perspiration. In bronchitis associated with any infectious disease the treatment is symptomatic. In typhoid fever the patient should not be allowed to lie too long on his back, and friction by stimulating the lung reflex of dilatation prevents collapse of the lung. Friction is also useful in the congestive type associated with mitral stenosis. In intestinal stasis a brisk purge and antiseptics do good.

Thin, spare, wiry individuals are not only less liable to bronchitis but more easily treated.

Diet.—The carbonic acid is excreted by the lungs and therefore it is desirable not to manufacture more than is necessary. Fats and carbohydrates should be cut down to the minimum necessary to supply the combustion of the body. The kidneys are usually sound unless at a late stage of the disease, and therefore a free allowance of nitrogenous food is not only permissible but advisable. This food when combined with electrolytes, such as the salts of calcium, potassium and sodium, improve the electrical condition of the body, and so the health of the individual. Every cell in the body, especially the muscle cells, may be looked upon as a miniature battery, and its electrical potential depends on the difference in the potential between the ions within and without the cell. The electrolytes are essential to life and our best vitamines in health and disease.

Vaccines.—These have taken the most prominent position in prevention and treatment; an autogenous vaccine is no doubt the best if the swab be taken by the bacteriologist and immediately applied to the culture medium, but if it do not reach the bacteriologist for twenty-four hours the pathogenic organisms may be swamped by the overgrowth of the saprophytes, and all proportion lost. In such a case an ordinary stock blunderbuss might be better. Recently a distinguished physician, a man of world wide reputation told me that he had an autogenous vaccine for catarrh, but some pneumococci lodged up somewhere in the recesses of his nose had been missed, and so when the other organisms found his mucous membrane untenable, the pneumococci started business on their own account, and so he had to undergo the process all over again. I am one of those who think that the soil is of even more importance than the seed. Many of these bacteria are anions or kations which require an opposite electrical charge for their discomfiture.

Drugs.—If there be a deficiency of lime salts in the blood, which is often the case when the expectoration is abundant and albuminous, soluble lime salts should be given, especially the iodide of calcium; milk and gelatine in the diet. When the expectoration is scanty and tough, and there is much bronchial spasm, the lime is too abundant, and decalcifying agents should be used. This also applies to cases with rigid costal cartilages. The iodides and various preparations of iodine and thyroid are very useful in the spasmodic or asthmatic type of the disease. The bowels should be kept open. When there is troublesome cough, paregoric or opium and antimony are very useful. The carbonate of ammonia is not much used except as a stimulating emetic in the capillary bronchitis of children. When the acute stage has passed, tonics such as quinine, strychnine and hydrochloric acid are useful. Apomorphine and strychnine make a good tonic expectorant. In chronic cases terebene and other drugs of the turpentine series are beneficial.

Oertel (5) recommended a light dry nitrogenous diet with very little fluid and hill climbing. His patient, with a vital capacity of only 64 to 86 cubic inches, accomplished feats which would put a strong vigorous man to shame. Large corpulent, plethoric individuals do badly and should have their bulk reduced. In these cases the use of sodium chloride which has a high osmotic equivalent, should be restricted.

The treatment of emphysema should be largely dietetic and hygienic, a light, dry, nitrogenous diet a warm, dry atmosphere, iodides and decalcifying agents. As a rule there is no dyspnea except on exertion. They cannot stand high altitudes. The weight should be reduced by diet, limitation of fluid and exercise. He should be taught to expire rather than inspire, avoid tobacco and alcohol.

Hillclimbing up to 4,000 feet above sea level can be recommended, provided the vital capacity be not below 150 cubic inches in the male and 100 in the female.

For the injurious effects of high altitudes on the circulation, I can refer you to the writings of the late Alfred L. Loomis (6) and Theodore Zanger (7).

Mechanical devices have gone out of fashion except elastic bands to assist expiration. Some pa-

tients find it more comfortable to sleep in the prone position on account of the assistance afforded to expiration. No elastic band should be worn round the chest at night.

Nasal and thoracic breathing should be encouraged, in this way the costal cartilages are not so apt to become rigid, but a watch should be kept on any excess of lime salts in the blood.

Cold sponging in the mornings, the Aix douche with massage and other hydropathic measures can be commended, but the patient should not be kept long in the moist chamber. The Mont Dore cure, where there is a finely atomized spray, is at present popular in the asthmatic types of the disease. In acute attacks of asthma, speedy relief can usually be obtained by percussing between the fourth and fifth cervical vertebræ and on the second dorsal. If the heart be dilated and action labored, then the seventh cervical and second dorsal vertebræ should be concussed.

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Gastrointestinal Symptoms and Epigastric Hernia

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Small epigastric hernias are sometimes accompanied by gastrointestinal symptoms which are out of all proportion in severity to the size of the hernia. In fact, sometimes a hernia is not even suspected when the patient consults his physician, and the small tumor is discovered only after a painstaking examination of the epigastric region.

The subjective symptoms include colicky pain, nausea, sour stomach, distress after eating, occasional vomiting, constipation, and a dragging sensation in the abdomen, which is due to traction on the parietal peritoneum or on the falciform ligament. Villard believed that the unusual functional symptoms may also be due to traction exerted by the round ligament on the liver.

The pain is most severe in the epigastrium and sometimes extends to the thorax, the lateral abdominal wall, lumbar region, bladder and rectum. Blumer had a patient who complained of pain radiating to the shoulders and arms, and Aaron's patient had paroxysms of pain after eating, which sometimes extended around the body and down the thighs.

Patients sometimes secure temporary relief from the pain by vomiting, or taking a small quantity of liquid food, or by lying on the back. The pain is aggravated by coughing, physical exercise, and by eating solid food. Brandenberg stated that the first symptom of hernia in the linea alba in children is usually pain in the abdomen after meals, especially after breakfast.

The objective signs are often indefinite: A small tumor, sometimes no larger than the tip of the little finger, should be looked for just above the umbilicus to the left of the median line, or it may be found, in rare instances, in the centre or just to the right of the median line. While it is unusual, the hernia occasionally appears below the umbilicus, and the suprapubic variety makes its appearance just above the symphysis pubis in the median line.

Owing to the severity of the functional symptoms, which overshadow the objective signs, the existence of a small tumor may not be thought of, and it may be discovered quite accidentally during a close examination of the abdomen. The relief of symptoms which follow the reduction of this little tumor, may give the first clue to diagnosis. The most characteristic objective sign is localized pain and tenderness on pressure over the hernia. In obese subjects a small hernia may be impalpable, but a definite point of tenderness can always be located. If the hernia is reducible it disappears when the patient is in the reclining position, and the sharp edge of the ring can be felt by making pressure on the tumor and following it with the finger through the opening, as it is reduced. Small openings in the fascia that cannot be felt when the hernia is reduced can be detected by this maneuver. Light pressure on the hernia is sometimes followed by instantaneous belching.

As early as 1748, Arnaud called attention to the importance of examining the patient in the erect position. A small hernia can often be seen in profile when the patient coughs or strains. The reflex gastric pain is probably due to traction on the great omentum, which is attached to the greater curvature of the stomach and during the attacks, a piece of the omentum is caught between the sharp edges of the slit in the fascia. When the omentum slips back into the abdominal cavity, the pain disappears. Traction on the falciform ligament of the liver is responsible for the gastric pain in those small hernias in which this ligament or the fat between its layers is the sole content of the hernia. Gussenbauer explains the severe symptoms that occur in certain cases as being due to pressure on one or more of the nerve filaments of the five lower intercostal nerves which pass through openings in the linea alba. These intercostal nerves anastomose with the phrenics in the diaphragm.

In about twenty-five per cent. of epigastric hernias with symptoms, there are changes in the gastric juice and in the physical signs of the stomach itself. The most frequent of these symptoms are: Hyperacidity, lessened motility, gastroptosis and dilatation. Alessandrini reported a case in which an epigastric

hernia and a gastric ulcer existed in the same patient; the hernia did not become painful until the ulcer developed.

DIFFERENTIAL DIAGNOSIS

Small hernias in the linea alba, especially the epigastric variety, must be distinguished from diseases of the upper abdomen.

GASTRIC AND DUODENAL ULCER

Hernia in the linea alba has often been confused with gastric or duodenal ulcer, and sometimes the two conditions exist at the same time. The presence of a tumor or a slitlike opening in the linea alba, with or without the protrusion of a small mass on coughing, will help to establish a diagnosis of hernia. In gastric ulcer there is a localized point of tenderness in the linea alba, as is always found in hernia. In ulcer the symptoms come on at a certain interval after eating, while in hernia the paroxysmal attacks have no relation to meals but usually follow physical exertion, and the patient finds that the most relief is secured by assuming a doubled up position, which relaxes the linea alba. In hernia, relief is sometimes secured by lying on the back; and in ulcer, by lying on the right side.

CHOLELITHIASIS

Hernia in the linea alba is sometimes mistaken for gallstone attacks. In hernia there will be an absence of jaundice, leucocytosis, and pain over the gallbladder, all symptoms that are characteristic of gallstone colic.

OTHER CONDITIONS

Other diseases that hernia in the linea alba has been mistaken for are: Habitual epigastric protrusion in children, gastritis, gastralgia, carcinoma of the stomach or intestine, cholecystitis, colitis, appendicitis, nephrolithiasis, angina pectoris, abscess or tumor in the abdominal wall, and the gastric crises of tabes.

RÖNTGEN RAY EXAMINATION

When the epigastric hernia is complicated by gastrointestinal symptoms, even though they are mild, a röntgen ray examination is important for diagnosis because of the frequent association of gastric and duodenal ulcer with this variety of hernia. Sometimes when the röntgen ray examination is negative it is advisable to do an exploratory laparotomy at the time of the hernioplasty.

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Renal Infection

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Renal infection is an inflammation of the kidney or its pelvis due to pyogenic organisms. Tuberculosis of the kidney is not considered with this group because the tubercle bacillus is pathogenic rather than pyogenic.

The normal kidney is resistant to infection; it eliminates disease producing germs without apparent damage. Infection occurs only after the resistance of the kidney has been lowered by some general or local cause. The general cause may be any acute infection or chronic exhausting disease; and anything which will produce local congestion of the organ will act as the local predisposing cause. Examples of the latter are, 1, mechanical irritation by a calculus; 2, congestion about a tumor or an ulceration; 3, congestion due to retention of urine above some obstruction; and 4, irritation of the organ by urine which contains an excess of chemical or bacterial irritants.

The exciting germs most often found in infection of the kidney are the colon bacilli; these account for about seventy-five per cent. of all the cases. This shows how necessary it is for the physician always to bear in mind that colon bacilli penetrate the healthy mucous membrane of the intestines after two days of constipation; and when the mucous membrane is diseased the passage of these germs into the blood is still easier. The other germs most commonly found in renal infection are the staphylococcus, streptococcus, the Bacillus proteus vulgaris, Bacillus pyocyaneus, and less often the pneumococcus, gonococcus and an anerobic germ.

Routes of infection.—The most common routes taken by the infecting organisms are supposed to be the hematogenous and urogenous; other paths are the lymphatic and direct extension from neighboring infected areas; infection may be implanted at the time a kidney is wounded.

It is probable that cases of renal infection that follow inflammation of the lower urinary tract are generally extensions of the original infection through the lymphatics in the coats of the ureters which connect the lymphatics about the bladder and those of the kidneys, or they are hematogenous infections, the microorganisms entering the circulation from these lymphatics and landing in the kidneys.

Kinds of renal infection.—We will divide renal infections, first, into nonsurgical and surgical. By the term nonsurgical we mean an infection where local treatment or surgical intervention in any form is clearly useless to improve the condition of the kidney or to attempt to save life. We will dismiss the nonsurgical form with these few words: Occasionally the irritation produced by the infecting organisms though persistent is too mild to produce noticeable amounts of pus. A proliferative inflammation sets in which finally produces a chronic interstitial nephritis with the usual symptoms of this condition plus a bacteriuria.

The surgical form of renal infection is the on

usually found. Suppuration is present, or where an infectious pyelitis is catarrhal it may progress to suppuration.

It is not necessary nor advisable in a paper such as this to dwell long on the divisions and subdivisions of the pathological changes of renal infection; they are all different degrees of the same process. The divisions usually made are: Bacteriuria (of renal origin) where the pus is microscopic in amount but the bacteria are present in enormous numbers; pyelitis—acute catarrhal, chronic catarrhal, and suppurative; nephritis—the nonsuppurative, infectious catarrhal form—the nonsurgical form mentioned above; suppurative forms: a, focal or miliary suppurative foci, b, abscess; this is usually due to the coalation of several miliary foci; suppurative pyelonephritis, acute and chronic; and pyonephrosis which is really an exaggerated pyelonephritis.

SYMPTOMS OF RENAL INFECTION

The most important symptoms of renal infection can be placed in the following groups: 1 Changes in the urine; 2, the symptoms of sepsis, due to the infection; 3, symptoms of renal insufficiency following extensive destruction or damage of kidney tissue; 4, local symptoms due to the local pathological changes, and 5, certain reflex symptoms that are found with renal infections.

1. Changes in the urine:

a. Bacteriuria: This is present in greater or lesser degree in every case of renal infection. The germs may be present in such numbers as to make the urine hazy and give it a foul odor.

b. Pyuria is present provided any pus which has formed has freedom of exit; viz., if the pus can flow into the renal pelvis and out with the urine. If pus which has formed can not escape, the urine is clear but symptoms of sepsis, chill, fever, sweat, etc., may be present due to absorption of the pus; and locally, pain and tenderness may be present at the region of the kidney from tension by the retained pus, and tumor from the mass of pus in the kidney.

c. The quality of the urine—the amount of urea and other solids it contains depends on the amount of destruction and other damage of renal tissue.

2. Symptoms of sepsis: These vary from mild nausea and malaise to vomiting, chill, fever and sweat depending on the severity of the sepsis. Severe symptoms are present also when the onset of the disease is sudden.

3. Renal insufficiency must follow extensive damage to the kidneys. Uremic symptoms set in, the patient complains of headache and vertigo, the skin and tongue are dry, there is a urinous odor about the patient, diarrhea may be present and finally delirium, convulsions and coma appear. Calculus anuria, which is due to a reflex inhibition of kidney function, gives a peculiar type of uremia that has been described in the section on renal calculi.

4. Local symptoms: Pain or discomfort may occur with any increase of tension within the kidney capsule or as a result of increased weight of the enlarged organ; the increased tension may also cause local tenderness. With sudden obstruction of the ureter, which may occur especially when the infection is accompanied by a calculus, the pain may be severe—as severe as a renal colic. Enlargement of the kidney is often felt, but not in every case of renal infection is the organ enlarged; when the pathological change is in the form of an interstitial nephritis, the kidney is smaller than normal.

5. Under reflex symptoms we find symptoms of irritation that are referred from the kidney or ureter to the bladder—frequent, painful urination and even tenesmus without any visible lesion in the bladder—just as in other cases pain is referred to the kidney from lesions below, i. e., lesions in the bladder and lower part of the ureter. If cystitis is present with the pyelonephritis, the latter may be overlooked.

Another noteworthy group of symptoms often foci, b, abscess; this is usually due to the coalition of the gastrointestinal tract which simulate toxic symptoms but are entirely out of proportion to the possible absorption of pus from the infected kidney.

COURSE OF RENAL INFECTIONS

Bacteriuria: The course of this mild form of infection varies. The disease may disappear promptly, it may last for years, or its symptoms may come and go. The general health remains good but there is always danger of more severe involvement of the kidney, should its resistance be lowered. Diagnosis of bacteriuria is made by the haziness of the urine and by microscopical examination of its sediment. This haziness is not affected at all by heat nor chemicals and but little by the centrifuge unless the urine is first diluted with an equal volume of absolute alcohol.

If the colon bacillus is the causative germ, the urine is acid and the lesion is usually in the renal pelvis; if the streptococcus or staphylococcus is the germ at fault, the urine is alkaline and the lesion is generally in the prostate. Drawing the urine from the individual kidneys will readily show if the lesion is in either kidney or in neither; clear urine from both kidneys and a contaminated urine from the bladder show that the lesion is below the kidneys and ureters—usually in the prostate.

With severer form of renal infection—catarrhal pyelitis or suppuration anywhere in the kidney or its pelvis—symptoms are more severe and varied. It is best to divide the course of the disease into acute and chronic. Where the onset is sudden or where considerable pus is retained the symptoms are severe; we find chills, fever and sweat, nausea and vomiting, prostration, mental dullness, and other symptoms. Local pain follows sudden tension within the kidney capsule and with it tenderness appears at a renal pain area. The fever may be continuous, remittent or intermittent. With the discharge of pus which had been retained, the severe symptoms subside but the urine which had been clear becomes purulent. If the kidney structure is involved extensively, uremic symptoms set in and death may ensue.

In fulminant cases death may occur before any pus is formed; the kidneys are found filled with the invading microorganisms. In nonfulminant cases the symptoms subside after two or three weeks, the fever falling by crisis or lysis; but the attacks are apt to recur for some months on getting out of bed. In still other cases the symptoms persist for from three to six weeks with periods of remission but no intermissions and death occurs from uremia.

In chronic forms of renal infection whether these

follow the acute form or are chronic *ab initio,* the symptoms are much milder and may not be noticed for some time. In most cases symptoms of several of the groups mentioned above are found together; and acute and subacute attacks are not uncommon.

The course of renal infection depends largely on the drainage of the suppurating areas. With good drainage it is possible for destroyed tissue to be discharged and the lesion to scarify after weeks or months or years. This may not be so rare in tuberculosis of the kidney as is generally supposed. The effects of sclerosis are mitigated or annulled by compensatory hypertrophy of neighboring parenchymatous tissue.

When death occurs it is due to uremia or some intercurrent affection.

PYELITIS IN CHILDREN

Pyelitis of infancy and childhood, a condition not at all uncommon, occurs principally in females and at from several months to several years of age. A history of enteritis is obtained usually; the child is perhaps constipated most of the time and has had attacks of diarrhea. At times it has painful, bloody stools and its anus is sore.

The onset may be severe with chills and fever of 104 or 106, and vomiting, delirium and squint may be present. The fever is peculiarly irregular, shooting up and down and perhaps not alike any two days. Tenderness of the kidney is a very important symptom when present; it may, however, be missing. The urine is acid and shows traces of albumin, pus, germs, cells of pelvic and bladder epithelium and hyaline and granular casts.

In an infant, chills without malaria are suggestive and high fever and distress without sufficient apparent cause are suspicious of pyelitis. Diagnosis is made by the discovery of pus and germs in the urine. The symptoms subside in a week or ten days under treatment and in most untreated cases the patients recover spontaneously; very few die. Pus and especially bacteria may persist in the urine for weeks or longer, and it is essential to treat the patient till the germs disappear.

DIAGNOSIS

In making a diagnosis, include, if possible, a, the location of the original focus of infection; b, the freedom (or lack of freedom) of drainage for any pus or products of inflammation that may be present; c, the presence or absence of calculi, etc., as a complication; d, the amount of destruction of the affected kidney—its functional capacity; e, the functional capacity of the second kidney, and f, the infecting organism.

The focus of infection may be in a tonsil, the adenoids, the nose or its accessory sinuses, the roots of the teeth, the prostate, a seminal vesicle, the uterus or ovaries; the importance of the intestinal canal as a source of infection has already been mentioned. Pus which has a more or less free exit through the urine, gives pyuria. Retained pus is apt to cause fever and the other symptoms of sepsis mentioned above, while the urine is free from renal pus. The functional capacity of the diseased kidney and of the second kidney is ascertained by some of the renal function tests. The presence or absence of complicating renal calculi, etc., is demonstrated by the history, the x ray, pyelography, etc.

PROGNOSIS

The prognosis depends upon the freedom of drainage of the infected area or on the possibility of establishing free drainage, on the amount of kidney tissue destroyed, on the presence of complicating calculi and the possibility of their removal.

Renal bacteriuria may disappear readily, it may persist for years or come and go. The general health may be good but danger of further infection of the kidney is always present, should the resistance of that organ be temporarily weakened from any cause.

Acute catarrhal pyelitis is cured readily, even spontaneously, if no permanent predisposing cause is present, such as obstruction in the urinary tract, calculus, and other conditions. If the condition does not disappear it may go on to suppurative pyelonephritis or focal suppurative nephritis.

The outlook for recovery from catarrhal pyelonephritis or pyelitis is fair if drainage is free and proper treatment is given.

The prognosis of acute suppurative conditions of the kidney varies with the pathological changes present. In fulminating forms, the patient dies in several days; in forms which are less severe and in which the drainage is free or is made so, the condition becomes chronic and we get a compensatory hypertrophy of healthy renal tissue to take the place of that destroyed. Multiple (focal) abscesses can not be drained well and necessitate nephrectomy.

Chronic suppurative pyelonephritis may improve markedly, even after years, if the drainage is good. Diseased tissue may be discharged, the lesions scarify and neighboring renal tissue undergo compensatory hypertrophy. If a mild inflammation persists, a chronic interstitial nephritis develops.

Pyonephrosis, a condition in which the kidney is practically destroyed, may terminate in one of several ways. The patient may die of sepsis or anuria; a closed abscess may burst into the ureter and be discharged, or it may open into the perinephric sac or into some neighboring organ; the pyonephrosis may be destroyed by the pus becoming caseated or the organ undergoing fibrofatty degeneration.

TREATMENT

The treatment of renal infections may be divided into operative and nonoperative. Operative treatment is ordinarily necessary in two classes of cases: 1, where there is any interference with the free drainage from the kidney, whether the obstruction be in the urethra, at the prostate, in the bladder, at the ureter from kinks or from pressure upon it, or at the renal pelvis from calculi or tumor. Relief of such obstruction removes the great obstacle to cure and at the same time removes the predisposing cause for the infection of the kidney; 2, when purulent conditions exist which can not be cured by the defensive action of the body and the removal of which offers hope of cure of the patient. In such cases save all kidney tissue possible.

Nonoperative treatment of renal infection includes 1, expectant treatment: This is used in cases where no indication exists for surgical intervention and which are expected to recover especially if the symptoms are alleviated and Nature is assisted. 2. Curative treatment: This consists of the administration of sera and vaccines. Sera are given to neutralize the toxins produced by the infecting organisms and are

therefore indicated in the acute stage of the infection; vaccines stimulate the reaction of the body to the germs from which they are made and are of most service in chronic conditions. 3. Palliative treatment is used to relieve symptoms in cases that can not be cured by any method of treatment.

Among the measures used in expectant and palliative treatment of renal infections, flushing of the kidneys by drinking plenty of water and administering urinary antiseptics are of importance. Direct treatment of the renal pelves—lavage and instillation through the ureteral catheter is often of much benefit, according to our observations.

RENAL TUBERCULOSIS.

As is the case with renal infection by pyogenic germs, tuberculosis attacks the kidney only after this organ has been weakened by some general or local process; for the tubercle bacillus, like pyogenic germs, passes through the normal kidney with no apparent damage.

Theoretically there is no reason why the kidney may not be the first organ in the body to be infected with tuberculosis; for it is conceivable that tubercle bacilli which enter the body by any route, may be passed on to a kidney which has become susceptible. However, experience shows that practically every case of tuberculosis of the kidney has been preceded by a tuberculous infection of some other organ.

Renal tuberculosis is found most commonly, though by no means always, in patients between twenty and forty years of age, except where it is part of an acute miliary tuberculosis which usually comes in children.

The routes by which the tubercle bacilli reach the kidney are those along which pyogenic infections spread, viz., through the blood stream, under certain conditions through the urinary passages, along the lymphatics and by contiguity; the hematogenous route is the usual one.

Bilateral involvement is of more importance here than in pyogenic infection; for, once the kidney is tuberculous, none have ever been found, at autopsy, to be completely cured. Another and important reason is that after one kidney is infected with tuberculosis there seems to be a strong tendency for the second kidney to become similarly involved. It is therefore of the utmost importance to make a correct diagnosis early, whether renal tuberculosis is present, if one or both kidneys are involved, to ascertain the presence or absence of complications—pyogenic infection or calculus, and the functional capacity of each kidney.

Statistics show that when the patients are first seen, both kidneys are involved in ten per cent. of the cases, by the time operation is performed, in twenty-five to thirty per cent. and in those who die of renal tuberculosis or of shock following operation for this condition, in sixty to sixty-five per cent. Suppuration of the kidney is due to a complicating infection with pyogenic organisms.

Types of renal tuberculosis.—We can divide tuberculosis of the kidneys into nonsurgical and surgical if we understand by surgical kidney one that may be benefited by operation or the removal of which may conceivably be of benefit to the patient. For example, the kidney that is involved in an attack of acute miliary tuberculosis can not be considered fit for surgical intervention. Again, a toxic tuberculous nephritis is found as a result of elimination of toxins produced in some tuberculous focus outside that kidney; operation on this kidney is not indicated because the organ is not a source of infection and we may expect the nephritis to improve if the source of irritation is removed. Still another though rare nonsurgical form of tuberculous kidney is a fibrous tuberculous nephritis with giant cells but no caseation.

We divide surgical tuberculous kidneys according to the location of the lesions into the parenchymatous, pelvic and papillary types.

In the papillary form the first lesion is on a renal papilla. The tubercle ulcerates rapidly and as the tip of the papilla is very vascular, profuse hematuria may result. This type is rare.

The pelvic form of renal tuberculosis where the first lesions are in the pelvic wall is also unusual. This part of the kidney is involved more commonly by extension to it of the tuberculous process from the parenchyma. The walls thicken and ulcerate, and sclerosis with contraction of the tissues of the pelvic wall or of the tissues about it which also become sclerotic because of the local irritation, may shut off the kidney or a part of it—one or more calyces, and form a complete or partial hydronephrosis.

The usual form of renal tuberculosis is the parenchymatous type. The lesions are first formed at either pole; the miliary tubercles coalesce and caseate. Ulceration results from secondary infection. In time the tuberculous masses break down and discharge into the renal pelvis; and the liberated tubercle bacilli infect the pelvic walls. Occasionally the tubercles ulcerate through the kidney capsule into the perirenal fat and give rise to a tuberculous perirenal abscess. Still other lesions undergo caseation and calcification.

The amount of damage that may be found varies from a small tubercle to total destruction of the kidney. This depends on the virulence of the process, on the amount of obstruction to the flow of urine, also on the rapidity of the formation of this obstruction, and on the presence or absence of mixed infection.

The rapidity with which the disease spreads varies much. Destruction may be very rapid, or it may be very gradual and the patient live for years. In most cases the first symptoms appear long after pathological changes have set in; and then they may be so mild as to be ignored for some time.

The symptoms which may be found with renal tuberculosis are, a, general symptoms of tuberculosis—fever, loss of weight, etc.; b, local symptoms of the pathological changes, viz., pain, local and reflected; c, urinary disturbances—frequent, painful urination, hematuria and pyuria.

Aside from observing the presence of these symptoms we have recourse, in making the diagnosis, to cystoscopic examination for changes in the bladder mucosa and to ureteral catheterization to secure urine from the individual kidneys for examination and comparison. We also have recourse to laboratory methods in searching for the causative organism.

General symptoms.—The evening rise of temperature, a common symptom in tuberculosis, is present in a fifth or a quarter of the cases of renal tubercu-

losis; when the bladder becomes involved, the percentage rises to 80. Chills, fever and sweat point to secondary pyogenic infection. Signs of tuberculosis may be found in other organs.

Local symptoms.—Pain is present most commonly as a dull ache; this becomes intensified with the onset of acute congestion due to any cause. Pain that is still more severe follows sudden blocking of the ureter with the increased tension by the accumulating urine and the acute congestion accompanying it. A comparatively healthy kidney which has added work thrown upon it suddenly, with resulting acute congestion, may pain more severely than its more extensively diseased fellow. Tenderness of the kidney is often elicited by bimanual examination.

Tumor develops very slowly when the enlargement consists of caseated masses. Complications like perinephritis or a slowly formed pyonephrosis produce large masses.

Reflex pains.—With a diseased seminal vesicle we sometimes find pain in the loin; and, in the presence of a tuberculous kidney on the other side an incorrect diagnosis of tuberculosis of the second kidney may be made. A painful condition of a kidney may give socalled crossed pains—the pain is felt in the region of the healthy kidney and none at the diseased kidney. This is the socalled renorenal reflex. Bladder pain, felt in the suprapubic region or perineum, is often present with renal tuberculosis; it may be the most marked symptom even though the bladder shows no sign of any pathological change.

Urinary symptoms.—Polyuria, increased frequency, dysuria, hematuria and pyuria are found in many other kidney conditions as well as in renal tuberculosis. We attempt to differentiate these conditions by certain variations in these symptoms.

Polyuria is found with any irritation of the kidney or its pelvis except in the stage of acute congestion when oliguria is present.

Frequent urination is due in part to the polyuria, also in some cases to irritation by lesions in the bladder and in others to the reflex irritation of the bladder which is so often found with tuberculosis of any part of the urogenital tract. The great frequency of the latter was shown by the writers in an extended study of the urogenital tract in tuberculosis (The Urinary Tract in Pulmonary Tuberculosis, *Journal A. M. A.*, March 2, 1918). In tuberculosis of the urogenital tract the diurnal and nocturnal urination are equally frequent, differing largely from the frequency of urination found with other conditions.

Dysuria is due in the early stages to the irritation by toxic urine and perhaps to the reflex irritation of the bladder mentioned above; and later to ulceration of the trigone, when the frequency, pain and tenesmus may be extreme.

Hematuria, a common symptom in renal tuberculosis, generally appears first after the separation of a caseous mass. Later attacks come at infrequent, irregular intervals, without regard to activity or rest of the patient. The hemorrhage is scanty as compared to that from renal tumor, and painless as compared to that of renal calculus. A few red cells are always present.

Pyuria.—A few pus cells can always be found but considerable amounts appear only after a complicating pyogenic infection sets in.

Cystoscopic findings.—The bladder may appear normal when the kidney is already affected to a considerable extent; on the other hand tubercles or ulcerations at or near the ureteral mouth are strongly indicative of tuberculosis of the kidney above. Similar lesions about the mouth of the bladder point to tuberculosis of the prostate. Involvement of the ureter is accompanied by swelling or ulceration of its mouth and if the pathological changes are extensive the tube becomes shortened and may pull on the trigone sufficiently to convert the prominence about the ureteral opening into a funnel shaped depression.

Laboratory findings.—When the kidney is damaged sufficiently, its eliminating and concentrating power are lessened; the amount of urine is increased, but the specific gravity is lowered and the elimination of solids is diminished. The urine contains pus cells, red cells and casts.

The tubercle bacilli may be difficult to find with the microscope, especially as they may be eliminated only at intervals, in showers, in some cases. Animal inoculation will usually disclose their presence when the microscope does not. It is well to call attention here to the fact that tubercle bacilli may be eliminated by a normal kidney; this fact makes a diagnosis of tuberculosis of a kidney on the strength of this sign alone—without sufficient corroborative evidence unjustifiable. This caution is especially necessary at present when there seems to be a tendency to remove all kidneys in any way affected with tuberculosis, if the second kidney is supposed to be unaffected; or to remove the worse kidney when the second kidney, though involved, is still capable of supporting life.

Diagnosis of renal tuberculosis.—Judging from the statements above, it is evidently as difficult as it is important to make an early diagnosis of renal tuberculosis. Frequent, painful urination, both diurnal and nocturnal, are suspicious of tuberculosis somewhere in the urogenital tract. Hematuria which is usually slight and appears at irregular intervals coming and going without apparent cause and with the blood and urine well mixed, is suggestive of renal tuberculosis. Cystoscopic examination may show tuberculous lesions at or near the ureteral orifice. Tubercle bacilli found in the urine drawn from either kidney is presumptive evidence of tuberculosis of that organ but is not conclusive; if with the bacilli we find evidences of tissue destruction, pus and other conditions, the diagnosis is positive.

Prognosis.—The rapidity of the spread of the process depends on the patient's power of resistance and on the presence or absence of secondary infection. The bladder as a rule becomes involved within two years after infection of the kidney. The second kidney becomes involved in a considerable number of cases as was mentioned above.

As we have already stated, a kidney once tuberculous has never been found at autopsy to be entirely healed; and tuberculosis of the kidney is more quickly fatal than tuberculosis of any other urogenital organ. The longevity varies from a few months to ten or more years after the appearance of symptoms. We know of cases of longer duration than ten years where the patients are apparently doing well without operative interference.

TREATMENT OF RENAL TUBERCULOSIS

General antituberculosis treatment is always given and may be of great value, especially when combined with a change to a suitable climate. Symptomatic treatment directed to the bladder to relieve the frequent, painful urination is necessary to keep the patient as comfortable as possible.

The question of surgical treatment of renal tuberculosis is of great importance and is not easily answered in every case. The urge to nephrectomy lies in the fact that the prognosis of nonoperated cases is not very good; but the question must always arise, "Is it not likely, or possible, that operation on this particular case will do more harm than good?" We will attempt to summarize the reasons for and against operative treatment here:

Reasons against operation: 1. Few kidneys are so badly damaged but that they have some function; unless indeed the kidney is a closed pus sac. 2. After one sees, as we have seen, a number of patients with pronounced tuberculosis of the second kidney soon after the first kidney had been removed for tuberculosis, he feels less certain of the ease of diagnosing renal tuberculosis that is limited or almost limited to one kidney, and hesitates to do a nephrectomy in such a case unless the indications for it are clear. 3. After removal of one kidney, the other being healthy, the second kidney may become infected from some other tuberculous organ, as was the first.

On the other hand, as reason for nephrectomy, we will place:

1. A kidney that is badly diseased may produce sufficient toxins to irritate the second kidney, during their elimination, and this may be sufficient to more than counterbalance the value of whatever specific function the tuberculous kidney has left. Such a kidney should be removed at once, if the second one is in good enough condition to maintain life.

Obstetrical Paralysis

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Glancing over the literature of this subject, one notes that there has been a great divergence of opinion as to its cause. Originally the cause was ascribed to pressure. The literature does not clearly state as to when this pressure occurred, but the word is used in such a manner as to convey the impression that the pressure had extended over an indefinite prenatal period. Opposed to this theory are the opinions of a number of celebrated men, among them the late Sir Victor Horsley, who was known to be so thorough and painstaking in his investigations that one might well hesitate to dispute his findings which were based partially on dissection.

Much speculation has been indulged in with regard to the possible effect of the pressure of bones on nerve branches, and also the stretching of nerves to the possibility of rupture, during the passage of the infant through the birth canal. It is maintained that it does not matter whether the child presents by the head or by the breech; the condition may occur seemingly with equal facility in either presentation. It is stated as a matter of observation that only one case occurs in about two thousand births. If we are to accept this as a basis of study, it may well be asked why obstetrical paralysis is not fairly common instead of being relatively infrequent. With the greater number of instrumental deliveries, seemingly ever increasing during the three last decades, it certainly raises a great deal of doubt as to pressure and stretching of the nerves being responsible for this condition.

With so many individuals of varying degrees of skill in obstetrical practice, many of them not hesitating to apply forceps, it would seem that there should have been a great increase in the number of cases, if the condition was due to stretching and manipulation of the child's head, neck and upper extremities, during the instrumental delivery. More than that, there should be a great predominance of cases occurring in head presentation over those occurring by breech presentation. According to statistics, this does not seem to be the case.

To any one giving careful study to the matter of pressure on nerve trunks by the bony structures, it will be found that it is a difficult matter for any bone or combination of bones to impinge upon a nerve trunk so as to produce even a temporary damage to the nerve, so long as the bones and joints are neither fractured nor dislocated.

Much has been written and spoken concerning nerve injury in many different departments of surgery, from this source. The most of such assertions have been thoughtlessly made and purely from a speculative viewpoint. Nerve trunks may be overstretched when a part is pulled into extreme overextension, but this does not happen often. The fact that in obstetrical paralysis most of the disability is due to a spastic condition of the muscles involved, and that only a few of the muscles are involved, is worthy of serious study.

If there was a tearing of the nerve trunks, it would seem that, considering the nerves involved, there should be a more complete paralysis both sensory and motor, than is seen in these cases. It would seem as though there should be well nigh complete paralysis of a whole extremity instead of a limited paralysis, as is found in most cases. This muscular derangement will be found in many cases to involve the following muscles:

Muscles involved in the posterior scapular region —the infraspinatus possibly, but the teres minor and teres major positively. The latissimus dorsi never seems to be involved, nor can it be demonstrated that the triceps is involved. Anteriorly, the pectoralis major and minor are involved. The infraspinatus muscle is supplied by the fifth and sixth cervical nerves, through the suprascapular nerve; the teres minor by the fifth cervical, through the circumflex,

and the teres major by the fifth and sixth cervical, through the lower subscapular. The pectoralis major and minor muscles are involved. These muscles are supplied by the external and internal anterior thoracic nerves. The pectoralis major receives filaments from all the branches entering into the brachial plexus. The pronator radii teres is also involved. It is supplied from fibres from the sixth and seventh cervical. These muscles will be found markedly spastic. By gentle manipulation for a few minutes, the spasticity may be so overcome as to permit raising of the arm, forearm and hand at a nearly vertical position above the shoulder. This cannot be accomplished in a child in whom the deformity has persisted for some months or years. The deltoid muscle will be found flaccid and almost incapable of function. The supraspinatus, because of its peculiar location, cannot be so well estimated, but is apparently partially functionless.

To be sure, the opinion stated above is formed from a study of the usual type of cases, and not as an observation of any one particular, extensive case. It may occur in cases where there has been no instrumental delivery. In two cases coming within my own practice, the mother stated that the birth was seemingly normal and of no more than ordinary duration or severity. In one instance, the mother's statement was verified by the attending physician.

PROGNOSIS

As to prognosis, my opinion must be based on comparatively few cases, and is not given with a view to refute or dispute the opinions of many previous observers. If appropriate treatment is established within a few days after the infant is born, many of these patients will make a recovery so perfect that it is difficult tto find any deviation from the normal. If treatment is delayed for a few months, the results will still be good, but not perfect. If treatment is delayed for several years, much good may be accomplished in some cases; some good in quite a number more; and little or no results in perhaps one third of the neglected cases.

TREATMENT

A brace with a corsetlike part for the body, sufficiently reinforced by steel to make it secure, is placed on the child's body, extending from above the nipple to the waist line. This must be so constructed as not to cause pressure on bony prominences on the infant's body. Attached to this, on the side involved, should be a splint for supporting the arm and forearm to the hand, and so fashioned that the extremity may be gradually raised laterally from the body with the elbow of the splint hinged so as to flex or extend the forearm during part of the time.

The splint should be so hinged at the shoulder that the extremity may be raised both upward and backward until finally the extremity may be brought nearly to the perpendicular in extension, and carried backward posteriorly beyond the midlateral line of the body to a degree easily possible for the normal extremity.

If this appliance is put on within the first few days after the birth of an infant suffering from obstetrical paralysis, and kept on with the arm raised to nearly a right angle to the trunk and the forearm semiflexed, during the twenty-four hours, and extension increased during a portion of the day time, we may hope for a satisfactory result within from four to six months.

Owing to the difficulty of holding the forearm and hand in marked supination, the spastic condition of the pronator radii teres will be hardest to overcome.

The opinions herein expressed are based on a successful handling of about a dozen cases. I submit them for what they are worth. I realize that it is merely a start; but I believe that the results thus far obtained will fully warrant careful trial and investigation on the part of the profession.

Electricity and massage are, I believe, a waste of time in the beginning. Electricity is not indicated at all. Massage, as a follow-up measure, after the necessity for the brace has passed, I believe would be beneficial.

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Results of Lautenschlager-Halle Method of Ozena Operation*

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Much interest has been aroused by the Lautenschlager-Halle operation for the cure or amelioration of symptoms of ozena. I am publishing these findings almost prematurely lest undue enthusiasm cause injury to those it is intended to benefit.

The treatment of ozena today is satisfactory to neither the patient nor the physician. There are many methods for narrowing the nasal cavities and thus eliminating one factor which favors accumulation of fetid crusts; but the one devised by Lautenschlager and modified by Halle appears to serve the purpose best. While we feel that this operation will make the lumen of the nares narrower, we are not satisfied that it will entirely cure the ozena.

To perform the Lautenschlager-Halle operation paint the entire nasal mucous membrane with twenty per cent. cocaine to which a few drops of adrenalin have been added. Then inject one half per cent. solution of novocaine and adrenalin into the mucosa of the septum; into the floor of nose; and into the lateral nasal wall, especially in front of the turbinates and lower nasal duct.

The incision is started immediately in front of the middle turbinate and continued down past the front of the inferior turbinate to the floor of the nose, and across the floor to the septum. The incision extends down to the bone. The mucosa, the periosteum of the entire floor of the nose, and the lateral nasal wall in front of both turbinates are then elevated.

*Read before alumni association of Beth Israel Hospital, May 3, 1923.

The lower borderline to the floor of the nose of the lateral nasal wall is then chiseled submucously as far back as the posterior wall of the antrum. The antrum is entered and the separated lateral nasal wall is displaced as far as the septum, after first freshening with a curette the median surface of the inferior turbinate and the corresponding portion of the septum. The antrum of Highmore is packed tightly with gauze tape so that the displaced lateral nasal wall is kept in its new position.

The packing is changed after five days and renewed at intervals of two days until the antrum is completely closed. This packing is continued as long as possible in order to support the nasal wall in its new position. The operation, not counting the time until the anesthesia becomes effective, should not take more than thirty to forty-five minutes.

While most of the operations were performed without difficulty, one, owing to thick bone and small antrum, caused considerable technical difficulty.

The treatment can be ambulatory in all cases, although we admitted our first two patients to the hospital for the first twenty-four hours. Pronounced reactions were not observed, the patients were prevented from going about their work for only three to five days.

CASE REPORTS

CASE I.—J. R., aged thirty-eight, housewife. For ten years neighbors had called her attention to the odor from her nose. The patient complained of continuous mucous secretion in the throat and scabs in the nose. Had undergone treatment without improvement. Rhinological examination showed the septum deviated to the right, with both middle and inferior turbinate bones atrophied. Both nares were covered with closely adherent crusts and putrid secretion. After removal of these crusts with a bulb syringe, the mucous membrane appeared pale and of a grayish color. The nasopharynx was easily visible and its roof was covered with crusts. The pharyngeal wall was dry.

An x ray revealed both antra cloudy but exploratory irrigation yielded only clear fluid. The Wassermann was negative. Operation was done according to the Lautenschlager-Halle method at the right nostril September 22, 1922, at the left nostril October 8, 1922.

FINDINGS EIGHT WEEKS AFTER OPERATION

The nose was considerably narrowed. At the right, synechia was holding the lower turbinate to the septum. The opening into the antrum was closed. The approximation of the lateral nasal wall which existed after the operation was diminished. At the left a similar condition existed with a slight formation of crusts and the fetor was still present.

FINDINGS THREE MONTHS AFTER OPERATION

Patient admitted slight improvement. She could breathe better, but slight amount of crusts and fetor were still present. Approximation of the lateral nasal wall and the septum were diminished.

FINDINGS SIX MONTHS AFTER OPERATION

The right nostril was not yet clear of crusts and fetor. In the left nostril a small amount of crusts were still present. The lateral nasal walls had kept their previous position. Patient now stated improvement was hardly noticeable.

CASE II.—E. S., aged twenty-eight, married, housewife. For several years she complained of fetor, formation of crusts, and dryness in the pharynx. She also was prone to frequent attacks of hoarseness.

General examination showed patient to be normal. Wassermann was negative. Rhinological examination showed a typical advanced case of ozena with marked fetor; the septum was deviated to the right, the turbinates were atrophic, and both nostrils were dilated. The turbinates, the septum, and the floor of the nose were covered with scabs. The patient had lost sense of smell. She had been treated for two years without improvement. X ray showed clouding of both antra. The other accessory sinuses were clear. Exploratory puncture showed maxillary sinuses were negative.

The left nostril was operated on October 2, 1922, and the right October 18, 1922. Very thick bone caused considerable technical difficulty in this operation. The antrum was very small so that the displacement and approximation of the lateral nasal wall created the impression that the operation was not a complete success. Only a small packing which did not seem to support the approximation completely could be inserted.

FINDINGS SIX WEEKS AFTER OPERATION

Patient stated she had somewhat regained the sense of smell. Examination showed the lower turbinates approximated to the septum and held there by synechia. The mucous membrane appeared healthier and redder with small amount of crusts but no fetor present.

FINDINGS FIVE MONTHS AFTER OPERATION

Patient did not admit of any improvement. Examination showed the lateral nasal walls still approximated to septum. Crusts and fetor were still present.

CASE III.—F. W., aged twenty-nine, married, housewife. Complained of fetor and formation of crusts for past six to eight years; dryness of throat; and occasional hoarseness lasting one week to ten days. Examination revealed an atrophic nose. The septum and posterior part of the nares were covered with grayish black scabs. The x ray showed that both antra were cloudy but no pus was found present on exploratory puncture. The Wassermann reaction was negative.

The left nares was operated upon September 29, 1922, and the right October 23, 1922.

FINDINGS TEN WEEKS AFTER OPERATION

Both nares were considerably narrower, with septum and turbinates covered with small scabs and considerable amount of pus present on floor of each nostril.

FINDINGS FIVE MONTHS AFTER OPERATION

Nose still narrow, small amount of pus and crusts still present, fetor was gone. The patient did not admit improvement, and still has to use a nasal syphon to keep her nose clear of pus and scabs.

CONCLUSIONS

To draw conclusions from so small a number of cases[1] in so short a time is wrong. We must concede, however, that in a few of the cases there seemed

[1]Due to lack of space three of the author's cases were omitted.

to be some improvement in the ozenic symptoms at the beginning. Although the crusts and the characteristic fetor were still noted, the mucous membrane was redder and healthier in appearance, and the patients admitted some improvement.

It will be many years before we can determine whether this operative narrowing of the nose will be lasting or whether it will assume a place among the many unsuccessful methods of cure for ozena.

After the uniformly bad results in these six cases I have determined to discontinue this treatment as I find the patients derive no benefit from being submitted to all the annoyance of the operation.

950 Park Avenue.

Headaches of Nasal Origin*

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Headache is a symptom often complained of in many diseases. While a few headaches are definite and clear cut in character, permitting a diagnosis as to the source of the trouble, the majority are complicated, the pathology being obscure and diagnosis perplexing to the clinician. It often requires the closest observation, and the aid of many specialists, such as the ophthalmologist, the rhinologist, the gynecologist, and the laboratory, to elucidate the underlying cause. And there are headaches which are not cleared up after the most exhaustive study. To mask our ignorance, we call them neuralgia.

Of recent years practitioners of medicine have come to recognize that disease of the nasal chambers and accessory sinuses is in many cases responsible for obscure headaches and neuralgias. In fact, certain authorities assert that the greatest percentage of obscure headaches not diagnosed are of nasal origin.

In this paper I shall attempt to point out the anatomical disturbances of the nose and adjacent sinuses causing pressure and subsequently localized inflammation of certain cranial nerve areas. In order to have a clear understanding of the subject under discussion, a brief review of the anatomy and physiology of the nose will be of great help.

ANATOMY AND PHYSIOLOGY OF THE NOSE

The nose is divided by the nasal septum into two chambers, the right and left. Each chamber is again divided by the inferior and middle turbinate, into the inferior, middle, and superior meatus. The nasal chambers are lined with ciliated epithelium except the attic or uppermost part of the chamber, where it is lined with a specialized columnar epithelium, and which is concerned with the sense of smell. The functions of the nose are phonatory, gustatory, olfactory, respiratory, and to provide ventilation of the sinuses. The last two are of primary importance.

The sinuses are hollow cavities within the bones of the face and skull. They vary in shape, size, and number in different individuals. They are all lined with ciliated epithelium, which normally secretes mucus to keep the nasal chambers moist.

In primeval man, as in lower animals, the sense of smell was of absolute necessity. The sinuses being a part of the olfactory portion of the nose, were largely distributed with filaments of the olfactory nerve, and opened widely into the nasal chambers. However, in the progress of evolution this large distribution of the olfactory nerve has become less and less necessary. The sinuses in modern man are the residual olfactory organs. Hence the sinuses are being gradually closed off from the nasal chambers, until only small openings are present. These openings are called ostia; and in the antrum or the sphenoid sinus, the ostium is high above the floor of the sinus, an unfavorable position for drainage in case of infection.

There is a well recognized physiopathological law namely, that cavities lined with mucous membrane are predisposed to inflammation, when their drainage and ventilation are obstructed. Therefore, inflammation of the lining mucous membrane of the walled off sinuses becomes a frequent pathological process.

THE SINUSES

The sinuses are divided for clinical purposes into two groups: 1, the anterior, or superficial, or so-called series I; 2, the posterior, or deep, or socalled series II. The anterior group consists of the maxillary antrum, the frontal and anterior ethmoidal sinuses. The posterior group consists of the posterior ethmoidal and sphenoidal sinuses. The sinuses are so classified because of the location of the drainage, series I draining into the middle meatus, while series II drain into the superior meatus. Consequently any abnormality in the middle meatus, as deviated septum, inflammation, or swelling around the hiatus semilunaris will interfere with ventilation and drainage of the sinuses of series I. When the same anomolies exist in the superior meatus, as hypertrophied middle turbinate, deviated septum etc., the drainage of the sinuses of series two will be interfered with.

SYMPTOMATOLOGY OF SINUSITIS

In discussing the symptomatology of sinusitis we can not present each sinus separately. As a matter of fact a single sinus is rarely affected, two or more sinuses being commonly diseased at the same time. Indeed it is not uncommon to find all the sinuses on one side of the head affected, because a, they all have a common source of infection through the nose, and b, the sinuses are so closely associated that when one gets diseased the other is affected. The maxillary antrum, however, may be affected alone, when the infection arises from a diseased tooth, and therefore is most frequently involved, though Ballenger thinks that the ethmoidal sinuses are most frequently affected. The most prominent symptom of sinusitis is pain or headaches

*Read before the Mt. Sinai Clinical Society, March 27, 1923.

caused by irritation or pressure of the trigeminal nerve endings, lining the mucous membrane of the sinuses, or in their passing through the canals.

The study of nasal headaches resolves itself into a consideration of abnormal conditions of the nasal chambers and inflammation of the adjacent sinuses. I believe it is best to discuss the inflammation of the sinuses under two headings: a, frank sinusitis, when on examination of the nose we see pus, and b, when apparently the sinuses are negative.

FRANK SINUSITIS

In frank sinusitis the headaches are severe, sharp shooting pain during the acute stage. In the chronic stage, similar pain is experienced when the openings are closed, but open only when they get overfilled with pus. The pain is mild when the ostia are open and pus is constantly discharged. In fact, in many cases headache is entirely absent. Patients will consult the clinician for sore throat, or for postnasal dropping and cough, or hawking in the morning. On many occasions patients complain only of hoarseness or laryngitis. On examination we find badly infected sinuses that are the source of the trouble, and the patient, when informed of his condition, hardly believes it to be true, as he denies ever suffering from headache or discomfort in his nose. On closely questioning, however, he will admit that some time in the past he had an attack of grippe, which in all probability was an acute sinusitis, but now in the chronic stage, with the ostia well open, there were no symptoms to attract his attention.

HEADACHE WITH NEGATIVE SINUSES

In the second class, where the sinuses apparently are negative, patients usually complain of dull headaches, yet on anterior or posterior rhinoscopy no pus is seen. The x ray is then of great aid, it will show the antrum or sphenoid cloudy, and an exploratory puncture will corroborate the x ray findings. The reason that no pus is found on examination is because, as I have stated before, the openings of the antrum and sphenoid are high above the floor of the sinus, which is an unfavorable position for drainage while the upright position is maintained. However, during sleeping hours the ostia are favorably situated and the sinuses will empty their inflammatory exudate which will escape through the postnasal space and is either swallowed or hawked out and expectorated.

There is a group of cases of this class in which the patients complain of dull headache. On examination of the nasal chambers we find no secretion and x ray examination is indefinite. Exploratory lavage of the antrum is also negative, yet the patient is benefited by the lavage, and the headache ceases. Those headaches are called vacuum headaches, and are caused by a complete closure of the sphenoid, frontal, or maxillary sinus. The air is partly absorbed by the mucous membrane lining the sinus, and the negative pressure makes the walls sensitive. Under those circumstances, if the frontal sinus happens to be involved, the headache is made worse by the use of the eyes, because the floor of the sinus has attached to it the pulley through which runs the superior oblique muscle. The use of the eyes will pull upon the sensitive floor, and headache will result. This may be mistaken for eye trouble. Being aware that such conditions of the sinuses do exist, I make it a rule when a case is referred to me for examination and the findings are negative, never to report that the sinuses are negative, but that they are apparently negative.

A general impression seems to prevail that inflammation of a certain sinus will cause pain in a definite localized area of the head, as in frontal sinusitis the pain is in the supraorbital region; when the pain is between the eyes it is thought to be significant of ethmoidal disease, and that pain in the temples extending to the occiput means sphenoid disease. However, the more one studies sinus diseases the more he realizes that this impression is erroneous. While in a small minority of cases an uncomplicated frontal sinus disease will have a predilection for the supraorbital region, and a sphenoid sinus disease for the occipital region, the reverse condition may be seen in the majority of cases. As stated before, inasmuch as usually more than one sinus is affected, pain is not confined to one area.

ETIOLOGY

The abnormal conditions of the nasal chambers that will cause headaches are:

1. Pressure of a deviated septum on the middle turbinate, irritating the nerve endings of the trigeminus, which causes headache even in the absence of sinus inflammation.

2. Irritation of the sphenopalatine ganglion. The sphenopalatine ganglion, or Meckel's ganglion, is made up of branches of the superior maxillary nerve and the vidian nerve. It lies in the upper portion of the sphenomaxillary fossa, near the sphenopalatine foramen, close to the lateral wall of the nose, and behind the nasal mucous membrane. It can readily be seen that in any inflammation and swelling of the mucous membrane of the posterior part of the middle meatus, this nerve ganglion will be inflamed and irritated.

SLUDER'S SYNDROME

Sluder, about 1908, made observations on the sphenopalatine ganglion and he was able to attribute a certain socalled neuralgia to irritation of this ganglion. That type of neuralgia is now known as Sluder's syndrome, or lower half headache. It consists of pain in and about the eye, the uppper jaw and teeth extending back about the zygoma, into the temple, the ear, the mastoid, especially a little behind the mastoid processes. Pain in the occiput, neck, shoulder, arm, forearm, hand, and fingers. Other manifestations are mustard taste in the mouth, sneezing, nausea, vertigo, photophobia and asthma. Patients suffering from this symptom complex are treated either by the internist or the neurologist, though it is now conceded by all that it is purely a nasal condition. Of course it is not necessary to have a complete picture as that given above, in order to make a diagnosis of Meckel's ganglion irritation. You may have only few symptoms of those enumerated, or even only one symptom, such as otalgia or mastoidalgia. However, if other clinical manifestations are absent, think of the possibility that the trouble is caused by disease of the sphenopalatine ganglion. The treatment in these cases consists in cocainizing the ganglion with a strong solution of cocaine. In mild cases only one treatment may give permanent relief. In moderate cases the treatment

must be repeated several times while in severe cases the injection of alcohol into the ganglion will be necessary, as in tic douloureux.

SPHENOIDITIS

Another condition which will give rise to the same symptom complex, or Sluder's syndrome, is sphenoiditis, or inflammation of the sphenoid sinus, either purulent or hyperplastic, i. e., thickening of the mucous membrane of the sphenoid sinus with or without formation of polyps. I have stated before that Meckel's ganglion is made up of branches of the superior maxillary nerve that passes through the foramen rotundum, and the vidian nerve that passes through the vidian canal. Both canals are in the sphenoid bone in close proximity to the sinus, and closely fit the trunks of the nerves. Therefore, severe inflammation of the sphenoid sinus resulting either in periostitis or ostitis, will irritate the nerves that make up the ganglion by impinging on their canals. In other words, the inflammation in this case is central to the ganglion. In such cases application of cocaine to the ganglion is of no avail. Injection of cocaine into the sphenoid sinus, or operation on the sphenoid, will give relief.

Sluder reports many cases of this type that were treated by neurologists and internists without relief, but cocainizing the ganglion or sphenoid or operation on the sphenoid gave immediate relief.

In August, 1921, a case was referred from the neurological clinic to the nose and throat clinic of the Mt. Sinai Hospital, requesting an examination and report. It was my pleasure to study the case carefully. I reported it to be a case of Sluder's syndrome and applied a strong solution of cocaine to the sphenopalatine ganglion with slight immediate relief. Two days later the patient returned complaining of the same symptoms. I again cocainized the ganglion. The patient has never returned and therefore I can not state the result. The mistake I made in this case, I admit, was that the solution of cocaine I used was not strong enough. A saturated solution of cocaine is necessary to get good results.

CONCLUSIONS

1. A great many obscure cases of headache and neuralgia present pathological conditions in the nose which are the source of the trouble.

2. A greater cooperation between internist, neurologist, ophthalmologist and rhinologist will help to clear up many obscure and perplexing headaches.

3. Rhinology of today is not limited, as many are led to believe, to spraying noses, to snatching tonsils, and to wrecking septa. It is a branch of medicine where a thorough knowledge of the anatomy, physiology, and pathology, not only of the nose and sinuses, but of the most delicate and complex part of the human economy, the nervous system, is essential.

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Nasal Polypi and Sinusitis with Unique Features

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The following case report is presented because of its unique character, exhibiting a tic and a pus infection in one of many polypi.

Case.—Mr. G. A. H., thirty-two years of age, merchant, was referred to me for nasal obstruction. He had had typhoid at eighteen years of age, and his teeth became carious at that time. Thereafter he remained in good health until one year ago when dietetic glycosuria developed, due to excessive daily use of honey (a bottleful at breakfast time). Glycosuria ceased on stopping the honey and has not reappeared.

Six months ago, the patient told me that a few polypi were removed from the left nostril, giving much relief. Treatment was discontinued and the purulent discharge increased, always from the left nostril and with foul odor. The patient had a pronounced tic, blinking of left eye with contraction of left side of face, varying in frequency and degree. When interested and in conversation, the tic nearly ceased. Voice was very nasal at times. The right nose appeared normal; the left was badly blocked by polypi. There was a thick purulent discharge. There was no pain, but markedly obstructed nasal respiration.

Fractional operations being agreed to, one polyp was removed every two or three days, thirteen in all. A snare was used in removing the twelfth polyp complete, unbroken and with pedicle. There appeared a central globular spot in the polyp, about the size of a French pea, shining white and opaque. The polyp was the size of a raspberry and otherwise presented usual characters. Opening with a sterile scalpel revealed pus in its centre (the globular spot). It was placed in sterile gauze and submitted to Dr. J. W. Dwyer, who reported a pure culture of streptococcus hemolyticus.

The skiagraphic report made by Dr. Fred Law is as follows: Very small frontal sinuses; left showed severe, and right mild involvement. Left ethmoids and left antrum showed severe involvement. Right ethmoid and right antrum showed mild involvement. Sphenoids were clear.

In view of the great improvement in breathing and decrease of purulent discharge, the patient declined to submit to further operative procedures for relief of the sinus and ethmoid condition. When seen again, one month later, it was of interest to note the very great decrease in the tic described above. It is fair to assume that the muscular contractions were caused reflexly by the intranasal pressure (polypi) and perhaps by a toxic influence from the imperfectly draining infected sinuses.

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Practical Therapeutics

QUINIDINE IN TREATMENT OF CARDIAC DECOMPENSATION*

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The use of quinidine as a therapeutic measure in auricular fibrillation is gravitating to its own. The spectacular effects at times derived from its use gave promise which was in a measure fulfilled by longer experience. Its proper place is gradually being determined by indications and contraindications for its use. It seemed, at first, to be confined in its applicability to hospital patients. It has, however, also been used in ambulant cases and has been of distinct, although limited, benefit.

Wenckebach (1) in 1914 discovered the effect of quinidine in restoring normal rhythm in a case of auricular fibrillation. Frey (2) studied its effects and found striking results, and it is largely in consequence of his work that the problem became popular. Hoffmann (3) found in dog and cat hearts so perfused with quinidine that it became impossible to bring about fibrillation of the auricles.

Auricular fibrillation is not a direct consequence of an anatomical anomaly in the sinus node. Floystrup (4) demonstrated changes in the sinoauricular node in hearts without fibrillation; and a normal appearance of the sinoauricular node, the myocardium of the auricles, and the nervous system could be found in cases of auricular fibrillation.

It has been shown by Lewis (5) that in auricular fibrillation a circus movement exists in the auricle; that a single wave is propagated and revolves perpetually upon a reentrant path. The circus movement is repeated on the average 450 times a minute and it is this circulating wave which, in its revolution, alone controls the auricle in auricular fibrillation.

Lewis suggests that quinidine may act on auricular fibrillation by either slowing the rate of conduction of the contraction wave or by increasing the refractory period in tissue over which the wave has just passed. Thus it may prolong the refractory period to such an extent that circus movement is no longer possible. It may produce its effect also by decreasing the conduction rate and so slowing up the circus movement that the rhythmic function of the atrial muscle can reassert itself (6).

In a recent experimental and clinical study Korns (7) presents evidence which lends support to the belief that the action of quinidine in abolishing circus movement is not conditioned by the type of cardiac lesion, the degree of decompensation or the duration of fibrillation; but is essentially related to the pathological physiology of the auricular muscle.

The duration of the normal rhythm following its restoration by quinidine for the most part has been merely temporary. The more or less continuous administration of small amounts of quinidine tends to prevent the recurrence of fibrillation (8).

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The reports on the effects of quinidine on subjective symptoms and cardiac decompensation have been somewhat conflicting. Frey states that the drug exerts no favorable influence on passive congestion or diuresis. We found the same to be the case, and in four of the six cases that did not respond to quinidine, we were able to obtain some improvement under digitalis.

Sudden death, collapse, with respiratory failure, and other unpleasant results, such as embolic infarcts, have been reported. In four out of five fatal cases, the heart was badly decompensated (9). In our cases, however, no untoward effects were noted. Frey believes that lost compensation must first be restored with digitalis if possible (10). Then after a week's suspension, the quinidine may do good service. It is possible that this accounts for the relatively small proportion of successful results in our series.

In our series of seven cases we have obtained only one successful result. In the other six cases quinidine administered for a period of two to three days did not seem to be of any benefit. This is the same proportion as was obtained in twenty-two ambulatory cases reported (11). Of these, only three responded to quinidine sulphate with normal auricular ventricular sequence. Of these three, one remained regular for only a few days.

It will be seen, and this is the significant value of this report, that all of our cases were in an extreme degree of cardiac decompensation, not selected, and were treated promptly after admission to the hospital without the preliminary advantages of rest and digitalis.

In all our cases quinidine was given by mouth in two to three grain doses every two hours for a period of two or three days. Of course, in some cases smaller doses were administered as many complained of nausea and vomiting, probably due to the heart condition.

Electrocardiographic studies during the course of treatment have shown the profound effect of the drug in fibrillation. The oscillations due to the spread of the excitation wave in the auricle tend to become less rapid and larger. Frey noted that following the restoration of sinus rhythm, the T wave might become less high, the P wave altered in shape and the conduction time increased over the normal (10). In our successful case the electrocardiogram showed a sudden change to normal rhythm and the patient was discharged feeling very much improved, although edema still remained.

In the cases in which normal rhythm was not restored, there were no evidences in the electrocardiograms of any changes produced by quinidine. In the case in which normal rhythm was established, there was at first a slight increase in the ventricular rate as shown in the subjoined electrocardiograms. (Figs. 1 and 2.) The fibrillation did not seem to be any coarser and there was no evidence of auricular flutter. No premature beats were encountered.

We append brief reports of several cases to show the extent of cardiac decompensation.

Case I.—M. B., aged twenty-five. Following rheumatic fever at seventeen, she had occasional attacks of palpitation, became dyspneic on exertion, and was confined to bed for days at a time. For three years her symptoms were much worse and edema developed. She had occasional hemoptysis. Physical examination showed marked orthopnea, heart sounds completely irregular, systolic murmur present at times, pulse deficient. There was a small amount of pleural effusion, liver markedly enlarged, marked edema of lower extremities, triangular area of clouding at right hilus and clouding of right base. Urine showed many casts and much albumin. Blood chemistry showed slightly increased figures; blood pressure about 130:70. Quinidine was gives for two days. The patient's condition was still poor and there was no improvement of fibrillation. Digitalis was given.

Case II.—I. A., aged forty, had been in the hospital many times with the same cardiac condition. She returned complaining of dyspnea, cough and palpitation. Physical examination showed scleral jaundice, heart enlarged with auricular fibrillation, dullness at right base and liver markedly enlarged, marked edema of lower extremities. Urine showed albumin and granular casts. Blood chemistry figures slightly increased. X ray showed enlargement of cardiac shadow. Blood pressure about 125:80. Quinidine was given for two days. Condition not improved. Digitalis was again given. The patient died in a few weeks.

Case III.—R. S., aged forty-seven, had been in this and other hospitals several times before for her cardiac condition. She complained of dyspnea, orthopnea, palpitation and edema of the extremities and abdomen. The patient was cyanotic, heart fibrillating, systolic murmur at apex, moist râles at base, marked enlargement of liver, edema of the extremities. Urine showed albumin and hyalin and granular casts. High creatinin in blood. Blood pressure about 118:90. Quinidine given for three days. No change in condition. Digitalis was restored.

Case IV.—L. L., had had mild attacks of rheumatism recently. There was present chronic bronchitis and emphysema, auricular fibrillation, marked edema of extremities, liver slightly enlarged. Urine showed casts and albumin. Blood pressure about 170:100. X ray showed large cardiac shadow, increase of hilus markings, especially on left side extending to base. Quinidine was given one day with no change; digitalis given because the patient's condition became very poor.

Case V.—Y. B., aged sixty, complained of weakness, anorexia and dyspnea for four weeks. Palpitation for eight years previously. Orthopnea and edema of lower extremities for past few days. Physical examination showed slight enlargement of heart, irregular, fibrillating, pulse deficient, 56, edema of legs. Urine showed albumin and granular casts. Blood creatinin markedly increased—5.0. Blood pressure about 148:96. Quinidine given for three days produced no change.

Case VI.—R. S., aged forty, complained of palpitation and dyspnea for ten days. Had many attacks of swelling ankles, palpitation, precordial pain and dyspnea. Moist râles were found at the bases, enlarged heart, auricular fibrillation, edema of ankles. X ray showed cardiac shadow enlarged. Blood pressure about 110:85. Quinidine given for two days without relief.

Case VII.—N. L., aged fifty-four, complained of dyspnea and palpitation for twenty years, with increasing edema of lower extremities for six weeks. Occasional hemoptysis. Palpitation increasing past year and a half. Physical examination showed orthopnea, chronic bronchitis and emphysema, auricular fibrillation, presystolic thrill, double mitral murmur and enlarged liver with marked edema of lower extremities. Urine showed much albumin and casts. Blood chemistry figures were high. Blood

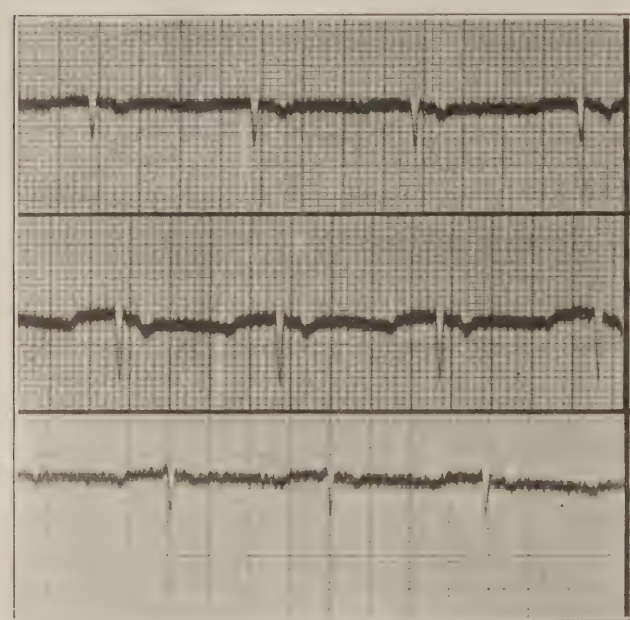

Fig. 1.—Before the administration of quinidine.

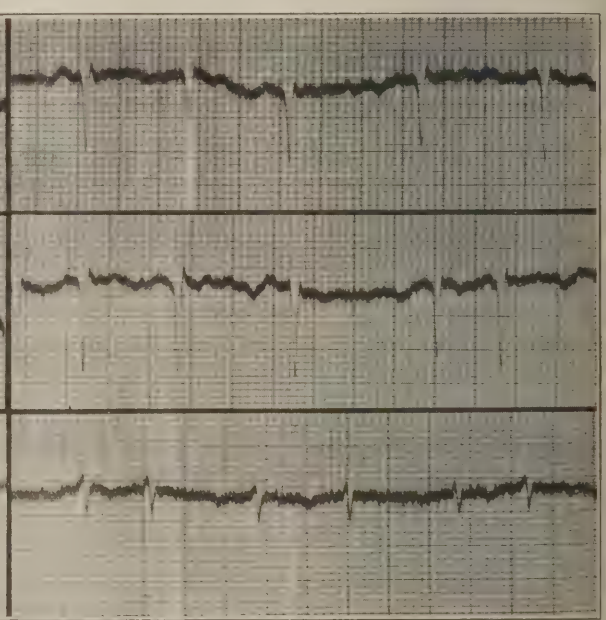

Fig. 2.—After four days of quinidine, in doses of two grains three times a day.

Wassermann test was negative. Blood pressure about 134:60. Quinidine was given for two days produced decided effect and the heart was found to be normal and regular. The edema still remained, but the patient was discharged improved. We have since been informed that two months later the patient died, apparently from heart failure.

We desire to express our thanks to Dr. J. Barsky, Dr. J. Reinthaler and Dr. D. Robinsohn, attending physicians to the medical service, Beth Israel Hospital for the opportunity to observe these cases in their wards and to Mr. Nicholas Opalonick for his technical assistance.

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Oral Vaccine Prophylaxis and Treatment of Bacillary Dysentery.—A. Gauthier (*Bulletin de l'Académie de Médecine,* January 15, 1924) reports, in the first place, on prophylactic vaccination by the mouth in 29,880 persons in Greece, mostly refugees. The dose was one mil in individuals over six years of age, one half mil in children of from two to six years, and one quarter mil in children below two years. The vaccine was taken in a little water, on three successive days, at least one hour before a meal. The only untoward effects were occasional slight nausea and brief dizziness two hours after ingestion of the vaccine. The vaccines used contained three billion killed bacilli per mil, consisting of the Shiga, Flexner, Strong and Y varieties. One vaccine consisted of peptone bouillon cultures, including the exotoxins as well as the endotoxins of the germs; the other vaccine was made from agar cultures, washed, heated and suspended in normal saline solution containing a little phenol. These two kinds of vaccine appeared to give equal results, the second, however, having better keeping qualities. From the third to the eighth day after vaccination, positive agglutination occurred regularly to a maximum of 1:250 for Flexner and Shiga germs; this property persisted generally two or three months, diminishing gradually. Among the whole number of persons thus vaccinated, no case of dysentery was observed during the summer or fall, though these persons were living in endemic foci and drinking water of poor quality. A number of local epidemics of dysentery, including one of demonstrated Flexner bacillus origin, were abruptly stopped by oral vaccination. In the Kokinia epidemic among 4,800 refugees, there had been 400 cases and 50 deaths. Oral vaccination was instituted in two thirds of the refugees, the remaining third serving as controls. The epidemic was checked at once in the vaccinated group, while among the others there still occurred 194 cases of diarrhea or dysentery. Elsewhere, 340 vaccinated individuals were moved into a contaminated camp; all remained free of the disease. In the attempts at treatment of established cases of dysentery by the mouth, the dose ranged from one half mil daily in children of six months to two years to two mils on the first day and three mils on succeeding days in adults. The amount taken each day was divided into three or more doses taken at different times. The duration of treatment averaged from three or four days in simple diarrhea to seven or eight days in severe dysentery. The results obtained consisted in rapid disappearance of pain, tenderness, tenesmus and blood, reduction of the frequency of the stools, improved general condition, and markedly shortened course of the disease. The percentage of cures in 660 cases of dysentery was 95.4; in 655 cases of simple acute enteritis, 98.16; in 34 cases of simple chronic enteritis, none; in 84 cases of infantile diarrhea, 57.1, and in 20 cases of diarrhea with green stools, 45. The favorable effect of the vaccine in diarrhea and enteritis with stools bacteriologically negative for the ordinary germs of dysentery proved somewhat of a surprise.

Treatment of Anemia by Intravenous Injections of Sodium Citrate.—Normet (*Bulletin de l'Académie de Médecine,* December 27, 1923) finds that mononuclear leucocytes undergo a transformation into normoblasts and erythrocytes as a result of this procedure. Each treatment consists in injecting forty to sixty mils of a three per cent. solution of sodium citrate—0.02 gram of the citrate per kilogram of body weight—into a vein at the bend of the elbow, in two doses five minutes apart. In the favorable cases, the red cells show an increase by the next day of as much as 600,000 per cubic millimetre, and in the course of a week the increase generally reaches 1,000,000. With the injections repeated weekly, the red cell count continues to ascend, with temporary phases of diminution after some of the injections. The treatment is stopped after this sixth injection, and three weeks the final result of the treatment can be judged. By this method recovery was obtained in severe cases of aplastic pernicious anemia, with the red cells reduced to 900,000 to 1,200,000, which threatened the patients' lives and had resisted the customary treatment by arsenic and iron. The best results are obtained in anemias with a high color index. In three cases, recovery, with the red cells at 5,000,000, has been maintained for over a year. In the two of these that had greatly enlarged spleens, the spleen showed a regular, progressive reduction in size during the treatment. The failures of the treatment, aside from chlorosis, were in the anemias symptomatic of grave organic disturbances such as tuberculosis and cancer. Experiments in dogs and rabbits showed that iron may with advantage be combined with the sodium citrate, 0.1 per cent. of iron and potassium tartrate being added to the three per cent. sodium citrate solution. Intravenous injections of this solution in doses of five mils per kilogram in dogs and three mils in rabbits led to an increase of fifty to eighty per cent. in the red cells after three fortnightly injections. Return of the cells to the normal number did not occur for several weeks. These combined injections are likely to prove of great value in the treatment of pernicious anemia.

Historical Medicine

The History of Bathing

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Man's rich restorative; his balmy bath
That supples, lubricates, and keeps in play
The various movements of this nice machine
Which asks such frequent periods of repair,
When tired with vain rotations of the day.
YOUNG.

THE ANTIQUITY OF BATHING

The writings not only of physicians, but also of historians, poets and lawgivers, bear witness that the practice of bathing is of extreme antiquity. Thus the restorative power of warm baths was recognized even in the days of Homer, who, indeed, tells us that Diomedes and Ulysses had recourse to them on their return from one of their expeditions, and again in the *Odyssey* observes that Telemachus and Pisistratus on their arrival at Menelaus's palace enjoyed their soothing influence. Here we have probably the first recorded instance of the recognition of the therapeutic advantages of warm bathing.

BATHING RITUALS

Grecian mythology abounds with similar allusions; thus, Pindar in his *Olympic Odes,* refers to the warm baths of the Cicilian nymphs, while both Aristophanes and Herodotus allude to the special veneration accorded to "natural" warm springs, all such being dedicated to the god Hercules. Leaving this region of myths and legends, we must not omit to refer briefly *en passant* to the ritual ablutions so scrupulously observed by the followers of the ancient Egyptian, Jewish, Mohammedan and other faiths.

THERAPEUTIC VALUE OF BATHING

That these ceremonial cleansings performed with such meticulous care had not, however, blinded the ancients to the therapeutic virtues of bathing, is evident from the writings of Josephus. This celebrated historian, in his monumental work, asserts that the warm baths of Emmaus were even in his day famed for their healing qualities, and from its pages we further glean the interesting fact that Herod, during his last illness, at the behest of his physicians, immersed himself in the hot springs of Callirhoe. The researches of antiquarians have indeed shown that hydrotherapeutic practice had attained to a high degree of excellence, even amongst primitive civilizations.

The splendor of the far famed baths of Darius, for example, bear eloquent, though silent, witness to the prominent part bathing exercises played in the everyday life of the ancient Persians, while amongst the Lacedæmonians, they were regarded as an essential part of an athlete's training. Again, that the Phoenicians were alive to the special advantages of the hot air bath may be fairly deduced from the remarkable discovery by Urquhart of a hot air chamber in the ruins of Baalbec.

HYDROTHERAPY IN GREECE

But while granting to these pioneer efforts their due meed of admiration, it must be admitted that they but dimly foreshadow the still more splendid achievements of the Greeks and Romans. The citizens of Athens enjoyed the luxury of both private and public bathing establishments, which indeed were attached to the gymnasia so highly prized by the Grecian youth. Nor was the therapeutic aspect of bathing overlooked, for turning to the writings of Hippocrates we learn that the Father of Medicine advocated the use of cold baths of short duration, which should, he thought, be both preceded by and followed by friction, though hot baths, he opined, might with advantage be more prolonged.

Again, as the following passage from the works of Aetius, the renowned Greek physician shows, the ancients were fully aware of the medicinal value of certain mineral springs and the beneficial effects that followed immersion in their waters. Thus he tells us that "Or natural bathes some have saltpeter in them as chief mineral and predominate of saltpeter by itselfe alone, some salt, some alum, some brimstone, some copper and some have earthpitche called bitumen. . . . . And they are good and profitable for all bodies which are moist and colde against nature and for such diseases as have long continued wherefore they are good for all kinds of diseases in the joyntes, the goute in the foote, palseyes, the diseases in the kidneys."

ROMAN BATHS

We must now pass on to that more interesting past of our historical retrospect which deals with the growth of hydrotherapy among the Romans. During the early days of the Empire, i. e., prior to the aedileship of Agrippa, no trace had yet presented itself of the colossal and sumptuously adorned thermæ, which, with the dawn of the Augustan age, were to add so much to the grandeur of the Eternal City. The baths made use of during the infancy of ancient Rome were indeed quite primitive in character, but *pari passu* with the growing prestige of the Roman power, their bathing establishments grew more and more and more pretentious, attaining the zenith of their splendor during the reign of Diocletian and Caracalla.

THE BATHS OF DIOCLETIAN

Though sadly worn by the corroding tooth of Time, the baths of Diocletian, stately even in their ruins, still remain, imperishable monuments of the skill and care bestowed upon them by the builders and sculptors of that brilliant age. Beside their vast magnitude our latter day establishments are dwarfed

to puny size, the baths of Caracalla even transcending those of Diocletian, which latter albeit reached the imposing length of 1,500 feet and were but little less in breadth. Noble and impressive as were the proportions of these historic thermæ their interior was no less magnificent, sculptor and artificer vying with each other to produce an almost barbaric splendor of adornment. Through the gaping mouths of lions fashioned of silver, the warm waters gushed forth continuously into baths, whose sides glistened with the varied hues of marble richly inlaid with mosaics, while the voluptuous patrician, scorning the use of baser metals, rested his enervated frame on seats, forsooth of silver made.

BATHING EXCESSES

That the practice of bathing was indulged in by the Romans to an inordinate extent is undoubted, and both Pliny and Seneca in their writings deplore this voluptuous abuse of an otherwise salutory custom, regarding it as a sign of that oncoming degeneracy in their countrymen, which ultimately culminated in the downfall of the Empire. Nor were they singular in their attitude towards this enervating habit in which Statius, a poet of the Claudian era, found food for one of his *Satires:*

> Nil ibi plebium; nusquam Temesae notabis
> Aera sed argento felix propellitur unda,
> Argentoque cadit, labrisque nitentibus instat
> Delicias mirata suas, et abire recusat.

To such an extent were the Romans enamoured of their baths, that, whenever their conquests led them far afield, they were wont to erect their well known thermæ; hence the ruins of which have been found in the confines of our own island at, for instance, Bath, Chester, Shrewsbury, and Cirencester.

Those ill advised excesses on the part of the Romans are all the more unintelligible when we bear in mind the quite considerable knowledge of hydrotherapy possessed by their physicians. Celsus, to wit, was familiar with not only hot and cold baths but also vapor baths, intelligently enlisting their aid in the treatment of disease. The same may be said of Asclepiades, a Greek physician who practised at Rome, and both of them, as we know, thoroughly appreciated the value of massage, also active and passive exercises.

That they showed discrimination in their "application of hydrotherapeutic procedures is evident from the works of Galen and Horace, in one of his epistles, tells us that he had occasion to consult Antonius Musa, and was advised by him to substitute cold for the warm baths he had been in the habit of taking. This same physician had the weighty responsibility thrown upon him of conducting the first Augustan emperor through a course of hydrotherapy, which happily, so Suetonius tells us, proved highly beneficial.

HYDROTHERAPY IN THE MIDDLE AGES

During the middle ages the science of hydrotherapy received its chief impetus from the Arabian physicians who keenly advocated the use of baths in fevers. Baas in his *History of Medicine* refers to the socalled bathkeepers who enrolled themselves into guilds and erected bath houses all over Europe. Here one may be pardoned a digression, in view of the interesting fact enabling us to refer to the reputed existence of a Chinese record, which asserts that many hundreds of years prior to the advent of Christ, a Chinese physician had employed cold affusions followed by packing in linen sheets, while we may add, on the authority of the *Tokio Medical Journal,* that a Japanese physician, Na Kaganu, wrote a dissertation on the medical use of baths some thirteen hundred years ago. In the fifteenth century a remarkable treatise came from the hands of an Italian physician, Michael Savonarola, advocating the systematic use of baths, and about the same time Barizzi suggested cold vaginal douches in uterine disorders.

HYDROTHERAPY IN ENGLAND

Again, in the early part of the seventeenth century, the value of cold bathing in dysentery and other disorders was insisted upon by Van Helmont and other Belgian physicians, while during the latter half of the same period Sir John Floyer's classical work appeared dealing with the right use and abuse of the hot, cold and temperate baths in England.

In 1747, John Wesley's well known work on primitive physick was forthcoming, to be followed shortly, some fifty years afterwards, by the justly celebrated treatise of Dr. James Currie which may be truly said to mark an epoch in the development of rational hydrotherapy.

Indeed as Dr. Fortesque Fox remarks, in his recent able lecture on hydrology, the remarkable evolution in hydrotherapy that took place in Austria and Germany during the nineteenth century was the direct outcome of Floyer and Currie's researches.

Within five or six years after the publication of Currie's work, his hydrotherapeutic methods were carried into effect in the hospitals of Vienna, and during the epidemics of typhus fever, which raged at that period, the victims were treated by immersion in cool baths.

FOUNDATION OF SCIENTIFIC HYDROTHERAPY

In 1830, a Silesian farmer, Victor Pressnitz by name, introduced his celebrated water cure which achieved amazing success. The systematic methods of bathing and dieting pursued at his establishment proved so salutary that before long similar institutions were erected throughout the Continent and in England at Matlock and Malvern, thus laying the foundation of our modern hydropathic cures.

Shortly afterwards, in Germany a series of experimental researches were undertaken with the object of ascertaining more exactly the effects of bathing at varied temperatures, its influence on the circulatory and nervous systems and metabolism generally. Subsequently, a large number of clinical and experimental studies on the same lines were conducted by workers in different countries especially in Austria, those of Wilhelm Winternitz, of Vienna, being justly and universally admitted to be the foundation of scientific hydrotherapy.

Here our retrospect, all too brief as it is, may fittingly cease, as with the impulse derived from Winternitz's work and labors, hydrotherapy emerged from the misty regions of empiricism into the clearer atmosphere of experimental study in which alone it can develop its immense resources.

Contributors to the Science of Medicine

FRANCOIS RABELAIS

François Rabelais was another of the world's geniuses whose true nature and real claim to greatness have been grossly misinterpreted. For nearly three hundred years, he was looked upon askance as an indecent buffoon. Then, when it was discovered that there was more than mere grossness and licentious humor in his writings, some critics went to the opposite extreme and declared that the laughter only served as a mask for a wholly serious philosophy which he was expounding. All this because it seems almost impossible for human beings to realize that we can laugh heartily and at the same time find life a very serious matter! This Rabelais was able to do; it was one of the deepest and most fundamental traits of his personality. He expressed this when he wrote:

Better is it to write of laughter than of tears,
For laughter is the special gift of man.

Rabelais's fun has been compared to that of Aristophanes It is gay, joyous, exuberant. *Gargantua* and *Pantagruel* is always open and above board, "naked and unashamed"; there is no licentiousness, no perversity, no pruriency exciting the imagination, no half revealing veils, nor innuendoes; vice is not dressed up to be attractive or enticing.

Much controversy has existed as to the date of Rabelais's birth, but most authorities now place it between the years 1490 and 1495. The place was probably the small village of La Devinière, near Chinon, where Jeanne D'Arc had her famous interview with the Dauphin. As the youngest of four children, he was destined for the cloister and probably given the tonsure at the early age of seven. He seems to allude to this, rather bitterly, when he writes in *Pantagruel:* "I do marvel whether the mothers in the other world can bear their children nine months in their womb, seeing that they cannot bear them nor brook them in their houses nine years, nay most often not seven; but by putting only a shirt over their robe and cutting a few hairs on the top of their heads, together with certain expiatory words, they . . . transform them into birds (monks) such as you see before you." He studied theology at Angers, became a Franciscan friar at Fontenay-le-Comte, a Benedictine at Maillezais, studied medicine, probably at Paris, but had degrees from Montpellier, presumably studied law at Bourges and Orléans, was a physician at Lyons, Turin, Rome and Metz. His life was one of constant change from place to place, sometimes in fear of his life, for his satirization of certain aspects of the Roman Catholic belief and practices, of Calvin and predestination, of royalty and the aristocracy, of the law courts, of some of the medical practices, and of many other phases of the life of his day which his broad and humanistic philosophy and common sense could not accept, aroused the enmity of powerful interests that never ceased their persecution during his lifetime. Fortunately he had a remarkable capacity for making warm and loyal friends who were always eager to give succor in time of need. His death probably occurred in 1553 at Paris. His last words were, *"Je vais quérir un grand peutêtre,"* a sentiment in accordance with the Rabelaisian philosophy symbolized by the quest of Pantagruel. He believed that the whole of life must be a seeking after truth and especially demonstrable scientific truth. He included in his studies botany, anatomy, and physiology in this quest of truth. Yet he firmly believed that man must go on this search, always accompanied by the "guidance of God and the company of man." Without "divine grace" and without friendship man is powerless. Yet each must interpret life according to his own imagination. "Imagine, and drink, and you will have the taste of whatever wine you imagine." But this is no lazy man's rule of self indulgence. It is like Nietzsche's stern command: "Be sure ye do whatever ye will—but first of all be such an one as *can will.*" Says Rabelais in describing the reformed education of Gargantua: "In their rule there was but one clause: Do what thou wilt; because that men who are born free, well born, well bred, conversant in honest company, have by nature an instinct and spur which always prompteth them to virtue and withdraweth them from vice; and this they style honour."

Statue of Rabelais in Chinon, France.

As a writer, without doubt Rabelais's rich vocabulary is his most obvious characteristic. This is all the more remarkable when we remember that no dictionaries had ever been published when he lived. His words are culled from all sources—languages, other writers, and his own fancy. He delights in long, rolling lists of them, and, not content with stringing them out in endless array, often draws

hem up in lines, columns, and classes, seeming ometimes to revel in the mere sound of them, irespective of meaning, in a kind of superior Gertrude Stein manner. His management of phrases is perhaps not so obvious, but even more remarkable, for his meaning almost never fails in clarity and his sentences are always cadenced. Other characteristics of his style are variety, precision, eloquence, wit and humor, and a charming naturalness, especially in recording the conversation of his characters. These are, in keeping with the mental attitude and literary practice of the times, typical rather than individual in conception and presentation. Panurge, the faithful, scholarly, rascally follower of Pantagruel, is perhaps the one exception. Throughout the writings of Rabelais are revealed his medical knowledge, his love of travel and geography, his plant lore, his broad acquaintance with the learning, manners and customs of his own times, and with the erudition of former times. He quotes and borrows from all sources, sometimes with, oftener without, any acknowledgment of the original. This, however, was a practice of the times and considered perfectly legitimate. Like Bernard Shaw, he was fond of writing lengthy prologues to his works, in which he frequently lauds to the skies himself and his opinions.

Both *Gargantua* and *Pantagruel* he declared to have been written solely to cheer and amuse his patients. As a physician, he occupied himself chiefly with one of the scourges of the day, syphilis. He followed the method of treatment of the Italian, Gaspard de Torella, by rubbing with mercurial ointment. Once, in doing some translating, he came across the description of an apparatus for fracture of the leg invented by Hippocrates. Rabelais modified and improved this, calling it a glossocomion. Another of his inventions, this time not a reconstruction, was the syringotome for incision of the peritoneum in deep lesions of the abdomen. As has been said, his works are full of medical terms and evidences of medical knowledge. The chapter on the birth of Gargantua contains many obstetrical terms and references. He knows much about hot mineral springs, argues about the possible legitimacy of a child born eleven months after the father's death, lists the anatomical organs of "Lent," comparing them to various objects common in everyday life, describes the blood in its system of arteries and veins, advocates the benefits of sleep, outlines a program of sex hygiene, and jibes at the superstitious cures of the day in the satire of Queen Quintessence. He declares that it is sinful to attribute to God or to the saints the infliction of sickness. He says that madness generally shows itself in the spring, mentions the three kinds of dropsy, and warns the doctor that the cheerfulness of his attitude or the reverse communicates itself to his patient. That the jovial cheer of his personality was a beneficial influence is shown by the large number of poems and epigrams written on the subject by friends and patients. He was well acquainted with the works of the Greek and Arabian physicians and with the pharmacopoeia of Avicenna. He made one of the earliest Latin translations of the aphorisms of Hippocrates, and was the first to lecture on medicine at Montpellier with the Greek text before him.

No sketch of Rabelais would be complete without including a specimen of his humor. One of the most famous passages of this kind is the description of the visit of Epistemon, Pantagruel's tutor, to the other world. He had been killed in battle, but was restored to life by Panurge, a procedure that he somewhat regretted because he was enjoying greatly watching the dead. "They are not treated so badly as you might think," he said. "Only their condition of life is strangely altered. For example, I happened on Alexander the Great mending old trousers, and thus earning a wretched livelihood. . . . In such fashion those who had been great lords earned their poor, wretched, scurvy living there below." Xerxes was peddling mustard, Cyrus tending cows, Nero fiddling for a living, Pope Julius selling tarts, Alexander VI was a rat catcher, Cleopatra sold onions, and Dido mushrooms. Cyrus begged a penny of Epictetus, surrounded by a gay company of singers, dancers and merrymakers, with which to buy onions for his supper. Diogenes was strutting about in a purple mantle, and felt called upon to beat Alexander the Great because he had not mended his trousers properly." George Meredith spoke truly when he characterized this delightful element of Rabelais' genius as "a veritable cataract of laughter."

And so we see the great jester, not as a mere buffoon nor yet as a subtle, ironic philosopher, but perhaps as he is described for us by one of his French biographers: the kindly friar, always joyous, *bon enfant,* holding in his lap the children of his parish and teaching them their catechism, with a sly dig now and then at theology, uncomprehended by the little ones, but for the ears of any adult friends that might be in the background; the beloved physician, who, his patients were wont to declare, could "raise from the dead," cheering the bedside with many a choice tale and anecdote; the prolific writer with remarkable literary talents and keen penetration into human nature; the student and critic, yet always with unfailing good nature and understanding, of the foibles and faults of his times, with practical suggestions for betterment implied if not definitely stated; and finally the jovial yet serious philosopher, the keynote of whose philosophy was the testing and enjoyment to the utmost of life by every human being; for it is only through the understanding and discipline gained through wide experience of the world that we can be of real service and benefit to our fellow men.

Naming Diseases.—In an article on Dr. George Cheyne and the English Malady, which appears in the *Annals of Medical History* for September, 1922, Hon. W. R. Riddell, of Toronto, says that it is an inveterate and almost universal custom to call a disease by a name indicating a foreign origin. It is difficult for the ordinary mind to look upon disease as a phenomenon arising naturally from native causes or to attribute it to anything but the hated foreigner or the act of a malign deity." The Russians call influenza the Chinese catarrh; the Germans call it Russian pestilence; the French call it Spanish catarrh or Italian fever, and also speak of gout as Italian. In the War of 1812, we called a type of influenza Canadian fever, and we have Spanish flu and German measles.

Editorial Articles

MIND, BODY, AND GOOD HEALTH

Does good health and long life depend most on the mind or the body? In this materialistic age, since the war materialism has increased, the question would be answered at once by the majority of people that health and longevity depend chiefly upon the body. At the same time, those who think deeply are becoming convinced that there is a much closer relationship between mind and body with regard to the maintenance of good health than is generally believed. Moreover, is it not possible or even probable that disease comes because mind and body are not working in harmony as they ought to work, and that in the production of disease or in its prevention, the mind plays a more important rôle than the body?

The belief which has been promulgated during recent years that diseases of the mind, that is, certain forms of mental disorder, have their origin in a bodily ailment, is receiving a great deal of attention. In fact, some clinical investigators say they have proved the point. In perfect health, it may be assumed that mind and body work in complete unison, and in disease this unison is broken. Longevity may be as much a mental and spiritual question as a physical one.

As Mr. James Douglas, a well known English writer, put it a short time ago, the secret of health may be found to reside, not in the arteries, the heart, the colon, the intestines, the kidneys, the spleen, the pancreas, the lymphatic or ductless glands, the nerves, nor indeed in any of the organs or nerves of the body, but in the spirit which controls all these organs and all the other energies and activities of the body. He points out that the atomic theory, which was made the subject of the presidential address of the British Association for the Advancement of Science this year by Sir Ernest Rutherford, a main originator of the atomic theory, has brought us closer to the secret of life. It has revealed to us the fact that in ourselves there is a universe of whirling energy which flows through our blood stream.

The secret of good health and long life, according to Mr. Douglas, lies in the coordination of the spirit and the body, and the harmony of both with the spirit of the universe. Mr. Douglas thinks that good health is to be brought about by means beyond our ken, and it is gained more by faith than reason. While medical men will hardly go so far as the English writer in believing that health and disease are dependent on the spirit alone, or rather on the coordination of the spirit and the body, few wi deny that faith goes a long way both in bringin about and preserving health.

The object of this article is to draw attention t the intimate relationship of mind and body an their influence on the health. If the mind and bod act in harmony and the ordinary rational rules o health are followed, long life is likely to be th sequence, at least, much more frequently than if th contrary is the case. The mind is probably the arb ter of health and long life as much as is the bod Optimism and the will to live will often pull a pe son through a serious illness, and of course th converse is true. And yet so far as long life i concerned, heredity plays a leading part. Many o those who have reached a green old age have bee frail and sometimes puny individuals, whose cond tions of life have not been ideal, but generally i their ancestry be probed into, it will be found tha they come of a longlived stock. Perhaps, and th is a question which might be investigated with son profit, they come from forbears who were possesse of stout courage, with the will to live. Psycholog is making great progress, and many moot points i this direction are likely to be cleared up soon. It i not well to be too sceptical of what we do not under stand. There are many things yet of which ou knowledge is elementary. It may be stated wit conviction that the influence of the mind on th body is very great, and that good health and lon life depend considerably on the state of mind.

MUSIC AS A THERAPEUTIC AGENT

Music soothes, charms and amuses some peopl but by no means all. On certain persons it has a annoying, irritating effect, while others are quit unmusical and can hardly distinguish one tune fro another. Curious to relate, many great artists an literary men of high renown are indifferent to musi or merely tolerate it. Poets even are sometime averse to music, Dante Gabriel Rossetti, for instance thought music positively offensive and Balzac an Victor Hugo hated it. Dr. Samuel Johnson was cer tainly more reasonable than these, as when Dr Burney encouraged him to believe that he migh in the course of time and with patience, learn some thing of music he replied, "Sir, I shall be glad t have a new sense given to me."

Dr. Agnes Savill, the widow of a well know London nerve specialist and herself a nerve specia ist of no small ability, has written recently a boo

entitled *Music, Health and Character.* The main object of the book is to endeavor to convince the unmusical that the sense they lack is well within their reach. And the fact which gives the book its special significance is that until Dr. Savill had passed the age of thirty she was entirely unsusceptible to the charm and influence of music and derived from listening to it only a sense of boredom. She tells the tale of her slow conversion, by way of curiosity and growing interest, to a deep love for that which had for long failed to arouse emotion and had left her soul untouched. So complete has been her conversion, indeed, that she is now able to write in the dual characters of a convert to the delight and glory of music and a physician who has convinced herself of the value of music as a healing agent. Her conversion was brought about at a concert at which she heard Busoni interpret, in his own masterly way, the études of Chopin and others of his works. In religion such a change is called sudden conversion.

The second part of Dr. Savill's book is devoted to a consideration of the effects of music on the human organism. She deals with the subject under the three heads, Physical Effects, Psychic Effects and Analogies and Practical Considerations and Applications. Dr. Savill argues and states from experience that cases of nervous troubles, known generally as neurasthenia, are frequently immensely benefited by music and, moreover, she contends that a love of music, rightly directed, can strengthen the whole character. In the words of the author, under the spell of great music a man finds that the obsession of sordid cares and anxiety fades into the background. Their true insignificance is revealed in the presence of the high emotion which raises him above his own limited personality. He loses his troubled individual self in a larger whole, and emerges strengthened, capable to cope with and overcome what had previously threatened to engulf him. He reaches out to a greater and deeper consciousness; the realization of the strength dormant within him tides him over the present obstacles and infuses fresh energy for the future. The armor of cynicism drops from the hardened man of the world; he knows, at last, that reality is as fair as the dream.

In short, Dr. Savill asserts, and draws instances from her own experience to prove, that music acts as a healing agent of which the possibilities have not yet been nearly gauged. Especially from the psychological point of view this statement can be easily believed. In certain nervous cases the effect of music is said to be almost magical, and, in any event, music is a therapeutic agent of value to those who love it, in that it takes one out of oneself and relieves the monotony of existence which sometimes in highly strung individuals threatens to be unbearable. Dr. Agnes Savill has done a great service in pointing out the value of music as a healing agent which in some cases soothes, and in others stirs the imagination and emotions.

SPORTS AND BREATHLESSNESS

For some years past, in all countries and in all classes of society, a return to Spartan customs has been highly in vogue. Muscular exercise enjoys marked favor, irrespective of age and sex. It can be rightly said that training has become a somewhat tyrannical custom everywhere. Nobody can underestimate the advantages of sports when judiciously indulged in. Not only do they develop the musculature, resistance to fatigue, and physical strength, but they also exercise a beneficial action over digestion and appetite, while at the same time they maintain the equilibrium of the nervous system.

One of the great obstacles to training is breathlessness, a form of fatigue impossible to overcome. It is dependent upon two factors, one inherent to the individual himself and resulting from defective functioning of one of the principal systems of the economy. Almost all subjects in a state of health and not too advanced in years can overcome this breathlessness by proper training. In point of fact, training is the evaluation of an ensemble of procedures which produce in the human body the maximum of work with the minimum of fatigue. The state of the health, strength, and resistance in which training places the body is termed the form. Hence the form is the object to be attained by training, which brings into play not only muscular exercise, but also that of the heart, lungs, brain, spinal cord, liver, kidneys, skin, and other organs. On the other hand, it is known that the functions of the striped muscles are subjected to the domination of the will, hence the psychic influence of training. Physical education, therefore, tends to place each subject in form by rational training.

Form is acquired by regular, progressive exercise, which must be sustained by an energetic will and daily effort. Certain rules, unnecessary to mention, preside over the development of form. In the first place, all the bodily functions must possess complete integrity and training should never be carried to the point of fatigue. A too intensive exercise produces autointoxication ending in fever from overwork, which occasionally may be a very serious matter. Integrity of these functions—respiration, circulation, and innervation—is essential for carrying out proper training, the cardiac functions being all-important.

All things being equal, and in a healthy subject, training will give rise to fatigue. In these circum-

stances, it is essential to have recourse to therapeutic measures which sustain the organism and prevent any useless organic loss, at the same time favoring the elimination of toxic products accumulated by physical exercise.

ON THE WRITING OF MEDICAL REVIEWS

No one who reads understandingly the medical magazines can help but be struck with the amount of loose thinking, sloppy construction and half baked ideas which they contain. No other type of trade journal could meet the overhead expenses and printing bills if they were conducted in the same way. Yet there exists today a superfluity of magazines bearing the imprimature of the medical profession which seem to get along someway, somehow.

As a matter of fact, medical journalism has not been standardized and at present its rewards for the most part are not sufficient to attract stable, well trained men who will make of it their life profession. As a rule the medical editor is a creation of circumstances. Too frequently he is a misfit in the medical profession and is obliged to eke out a half existence as an underpaid compiler of medical thought with which in its broad sense he is relatively unfamiliar. There are, of course, a few high class medical publications which are run as business institutions. There is also a group which caters exclusively to certain narrow specialties and looks for its support to the societies of which it is the exponent. There are also certain types of publications which are sales magazines for various chemical and instrument corporations and then too there is that wide and unclassified conglomeration of publications which have to do with various "isms and pathies." There are relatively few medical journals of the general type which really aim to be leaders of medical thought, which have a definite program to which they are committed. For the most part they are a spineless lot of pastepot and scissors followers which overload the second class mail and influence nobody.

In no other particular are they weaker than in the department of reviews. For example, the publishers send some new book which represents the work and the thought of some medical writer's lifetime. Such a publication merits careful, understanding scrutiny. Seldom does it receive this. Instead the book is handed to some medical fledgling or some office assistant who has no idea what the author is trying to say and the result is a wishy-washy review which does not tell anyone whether the book has any real value or not. There is a certain definite formula which is always followed. This is best illustrated by the following entirely imaginary book review:

A Manual of Automotive Medicine. For Physicians a other Automotivists. By Francois Patrick Kadutze fatzor, M.D., P.D.Q., A.S.S., Associate in Industr Automotivism, Johns Jeffersons Medical School; Surge to the Caduceus Garage. With an Introduction by Fo Henry, Oscar II Professor of History and Author *Out of the Trenches by November 11.* One volume 1012 pages, with 545 illustrations. New York and Pari P. Lippinston's Sons. Price $10.00 nit.

The distinguished author of this manual is t modest, since his work will compare favorably wi any other with which the writer is familiar. Th field of automotism would appear to be so well co ered that a new book would appear to be witho demand, but this is a new kind of a book, treatin the various diseases, ailments and eccentricities the automobile from a new angle and describing an classifying them. From the chapters on the prot zoal forms of the late nineties, the reader is carrie logically forward into the intricacies of subluxatio of the wrist pins, aphonia of the Klaxon and re gurgitation of the intake. The chapters on explosiv flatus of the muffler and impermeable stricture the gas feed are realistic and stimulating to though while that on stridor dentium of the gears has positive value of its own. The chapters on syno vitis of the universal joint and cylinderhead anthra cosis deserve special mention and those on generato cataplexy, engine dyslalia and tail lamp coccydyni are suggestive of Freud's more sweeping tenet The prevention of automotive presenility receive considerable attention. While the author and pub lisher have combined to present a volume of unusua excellence, both as to text matter and appearance the writer must take issue with the author's theor that enuresis of the carbureter is caused by tittila tion of the float valve. This may be *one* cause, bu others, such as nystagmus of the vacuum feed an ptosis of the butterfly valve, at least deserve men tion.

Is it not about time that medical journalism took stock of itself with a full realization of its respon sibilities, its opportunities and its necessities to th end that it may be purified, revivified and placed o the dignified plane of genuine usefulness?

TRAUMATIC HERNIA

Reference was made in a recent editorial to the subject of traumatic hernia in connection with in dustrial surgery. The New England Surgical So ciety in 1922 appointed a special committee to consider this subject and its report and recommenda tions, published recently, should be of interest:

We feel that the presentday attitude of making someone, other than the disabled individual, pay for disabilities for which no one is responsible, has been carried rather farther in the case of hernia than with most other alleged injuries.

The consensus of surgical opinion points very definitely to the conclusion that hernia as the result of a single injury or strain is of extreme rarity.

In view of the chaotic state of opinion respecting the etiology of hernia which obtains not only with the laity, but with a considerable proportion of the

profession as well as with courts and compensation boards, it seems wise to lay down certain criteria for determining what constitutes true traumatic hernia. We believe these to be essentially as follows:

1. Immediate descent of the hernia following the alleged cause, be it injury or strain.
2. Severe pain in the hernial region.
3. Marked prostration.
4. Symptoms of such severity that the individual calls attention to his condition within the first twenty-four hours.
5. No previously existing hernia at present site.
6. Trauma or strain must be adequate.

Where two or more of these criteria are lacking the case cannot be justly maintained to be one of traumatic origin. Where three or more are present, the question of a preexistent peritoneal pouch is immaterial.

Whether or not hernia in the main is or is not a disease of occupation and therefore compensable on economic or humanitarian grounds does not come within the realms of this discussion.

We, therefore, report that in our opinion this society should place itself on record as subscribing to the following:

1. True traumatic hernia is extremely rare, that is, most hernias are of very gradual development.
2. An individual presenting a claim for hernia in order to have his claim upheld must be able to furnish proof of having had at least four of the six criteria above laid down.
3. All other cases may be classed as disease either of congenital or occupational origin and are not the results of an individual injury or strain.

ARTERIAL PRESSURE IN RELATION TO LIFE INSURANCE

High blood pressure in this country at the present time is a matter with which the medical profession and also the lay members of the community concern themselves intensely. Perhaps the significance of high blood pressure has been exaggerated. It is a symptom and not a disease in itself, and yet when unduly high it is the red flag of danger hoisted to show that unless steps are taken to relieve the situation disaster will follow.

In this country and in Canada the medical examiners of the big life insurance companies are alive to this state of affairs. Many of them have realized the value of sphygmomanometry as applied to life insurance, and some of them even require all their medical officers to furnish records of blood pressure as a routine measure, irrespective of the age of the applicant or the amount of protection needed.

There has been brought out recently in Great Britain by Dr. J. F. Halls Dally, of London, a book on high blood pressure, a chapter of which is devoted to a consideration of arterial pressure in relation to life insurance. The author is of the opinion that the position of blood pressure in relation to life insurance cannot at present be regarded as satisfactorily established. He holds that a record of blood pressure in all examinations for life insurance is desirable, and by this he means a complete record, not only of systolic, but of diastolic and pulse pressures as well, in conjunction with pulse rate. He points out that in Great Britain, it is felt that not all blood pressure records are of equal value by reason of variations in personal equation of the examiners and in types of instrument, and there is considerable doubt as to the individual and statistical worth of figures furnished by large numbers of outside examiners.

To many practitioners the study of blood pressure is still a sealed book. Hence, the author suggests that in order to insure accuracy both for statistical tables as well as for separate reports, it would appear essential either for estimations to be made only by capable examiners at head and branch offices or for the companies to circulate to each of their medical referees a definite scheme of examination so as to regularize and render comparable the results, since otherwise it is too much to expect that practitioners throughout the country will universally take postgraduate courses of instruction in technic and instruments to be employed. It is certainly a reasonable stand to take, granted that blood pressure is a valuable signpost to the medical man when examining for life insurance, that the examiner should be able to take the blood pressure skilfully and correctly. While the companies in this country are more advanced in this direction than in Great Britain, it is doubtful if our country practitioners are better versed in the methods of taking blood pressure properly than their brethren in Great Britain. Then there is another point as to what weight should be attached to the results of a single examination. In some cases several examinations may be required, and, of course, one of the difficulties in life insurance work is to find sufficient opportunity for these.

As for the significance of high blood pressure there is no space in an editorial to deal with that phase of the matter. As said before, if very high it is a danger signal which should not be ignored, but in all cases the individual that is the personal equation, must be considered and this must be left to the examining physician. As Dr. Halls Dally says: Given rather more opportunity of examination in doubtful cases than is at present afforded, in proportion as diagnosis, and therefore prognosis, is rendered more certain, the protective value of medical examination is likely to be enhanced.

The really good examiner for life insurance is, perhaps, like the poet born and not made. On the other hand, another old Latin proverb is equally

applicable, namely, experience teaches. He should be a first class clinician and combined with his medical skill it is of advantage that he should be a good psychologist and business man, so as to be able to assess, with more or less accuracy, the relationship to insurance of the interwoven and complex individual, environmental, and financial considerations which directly or indirectly affect each proposal. With respect to the subject of this article the importance of arterial pressure in relation to life insurance it may be reiterated that it is a factor of moment, but that its signifiance must be left to the examiner or examiners. The point which it is desired to drive home is that the examiner should be skilful and the examination careful and of sufficient length when necessary to come to a satisfactory conclusion on the case. Also, as Dr. Halls Dally remarks, diastolic and pulse pressure should be taken as carefully as the systolic pressure.

ROYAL FREE HOSPITAL, LONDON

One of the deplorable results of the economic difficulties consequent to the World War has been, especially in Europe, inadequate provision of the upkeep of hospitals. One of the many institutions of this kind that have had such difficulties is the Royal Free Hospital of London. This hospital with a bed capacity of 240 treated last year 34,014 patients in its outpatient and casuality departments and 4,475 in its wards. It is a general hospital for the treatment of men, women and children, many of whom come from the poorer districts of London and its suburbs. Only patients who have some financial standing pay for their treatment; the poorer ones are treated free of charge, so the financing of the institution and its work must come largely from outside sources. Another method of obtaining the requisite funds is from the naming of cots and beds. It costs annually to name a cot £25, a bed £50, and to name each in perpetuity £400 and £1,000, respectively. The hospital contains a ward called Washington, after George Washington, at the request of the American Women's Club in London. The members of the club are greatly interested in this ward which contains twelve beds and twelve cots. It is their desire to name these beds and cots after famous American women, colleges or towns. It has been suggested that, since Dr. Elizabeth Blackwell was the pioneer medical woman in America, it would be most appropriate to name a bed or beds in the Washington Ward after her, especially since the Royal Free Hospital was the first hospital in England to open its doors to women medical students. Dr. May Thorne, a member of the teaching staff of the hospital, has been in this country in the interests of the cause and will establish a committee with the power to receive gifts and forward them to the Sir Francis Leyland-Barrett, Bart., honorary treasurer of the British Appeal Fund Committee. Until the American committee shall have been established, donations may be forwarded direct to Sir Leyland-Barrett.

PREVENTION OF MENTAL DISEASE

Helping to prevent mental disease through proper home care for mild cases and through free clinics was one of the most important lines of work undertaken during 1923 by the Mental Hygiene Committee of the State Charities Aid Association of New York. An outline of this work is given in their latest annual report. Such endeavors were begun several years ago, with the result that at the time of the report 3,300 patients for whom this was considered a safe procedure were paroled and are living at their homes, and many of them are selfsupporting. They are under continuous supervision, however.

Perhaps the most important step in the preventive program, however, has been the establishment of some forty free clinics for mental disease at all important population centres throughout New York State. At these clinics, persons who suspect the onset of mental disturbances in themselves, in members of their family, or in others whom them know, and patients on parole may receive medical consultation and advice, and, if necessary, assistance and social service from field agents attached to the staff of State hospitals. Last year, the report states, 13,329 visits were made to these clinics. Of these, 4,311 were made by persons who had had no connection with the State hospitals. Paroled patients made 8,587 visits. Of the total number of visits to clinics, 4,870 were first visits and 8,459 return visits. New State hospital clinics were opened during the year at Syracuse by the Utica State Hospital, and at Batavia by the Rochester State Hospital.

New clinics for mental defectives were established by the New York State Commission for Mental Defectives in Troy, Herkimer, Dunkirk, and Jamestown.

SCIENTIFIC PROGRESS IN 1923

The science of medicine bears so definite and significant a relation to general science that progress in both branches is oftentimes interdependent. Prof. Julian Huxley, of Oxford, author of *Essays of a Biologist,* has an article in a recent issue of the London *Daily Herald* in which he summarizes the scientific progress of the past year. Two lines of biological research were of particular importance in 1923 both giving increased evidence of inheritance of acquired characteristics. These studies were carried on by Dr. Paul Kammerer, of Vienna, who was recently in this country, through experimental work with newts; and by the Russian physiologist, Pavlov, who is said to have produced in one generation of mice a mental characteristic which is transmissible through several succeeding generations. Other achievements mentioned by Huxley are progress in the theory of the chromosomes, the Edinburgh studies in changes in sex, the experiments made in Paris in prolonging life by Dr. Voronoff, and the discovery in Mongolia by the American Museum of Natural History of the fossil dinosaur eggs.

Professor Huxley includes among medical achievements the placing of insulin treatment on a practical basis, the Dreyer treatment of tuberculosis, the studies of the effects on health of light, the discovery of the socalled Bayer 205, a cure for sleeping sickness, and the great progress of the year in cancer research.

News Items

Dr. Holt's Bequests.—Under the will of the late Dr. Luther Emmett Holt, $25,000 is left to the Babies' Hospital, New York, and $25,000 to the Columbia University for a fellowship in the medical department.

Memorial Meeting for the Late Dr. Biggs.—The Fellows of the New York Academy of Medicine will hold a memorial meeting for the late Dr. Hermann M. Biggs on Tuesday evening, April 29th.

New Clinic for Children.—A clinic for the treatment of kidney diseases in children has been opened at the New York Hospital under the auspices of the James Buchanan Brady Foundation. Dr. Oswald S. Lowsley, director of the urological department of the hospital, is in charge.

Personal.—Dr. Edward C. Titus has been appointed consultant in physiotherapy to the Reconstruction Hospital.

Dr. Chester F. S. Whitney has been awarded the Vermeil Medal of Honor by the French Government.

Dr. C. B. Goddard, of Johns Hopkins Hospital, succeeds Dr. George H. Bigelow as superintendent of the Cornell Bay Clinic.

Six Weeks' Course of Lectures at the Postgraduate.—The faculty of the New York Polyclinic Medical School and Hospital has organized a six weeks' course of coordinated, intensive, full time instruction, in an endeavor to cover in a comprehensive way the essential points in diagnosis and treatment in conformity with the present status of general medicine, surgery and the specialties. The object of this course is to assist the general practitioner in acquiring a practical knowledge of the more recent advances in medicine and surgery.

Harvey Lectures.—Dr. Herbert M. Evans, professor of anatomy, University of California, Berkeley, will deliver the seventh Harvey Society Lecture at the New York Academy of Medicine, on Saturday evening, April 26, 1924. His subject will be The Function of the Anterior Hypophysis. The sixth lecture was delivered by Dr. John J. Abel, professor of pharmacology, Johns Hopkins University Medical School, on Saturday evening, April 12, 1924, his subject being Physiological, Chemical and Clinical Studies in Pituitary Principles.

Postgraduate Course in Dermatology and Venerology.—A practical course in cutaneous and venereal diseases has been arranged by the Faculty of Medicine of Strasbourg, under the direction of Professor L. M. Pautrier and Dr. Jenklen. The course will be held from Monday, September 2d, to Saturday, November 8th, every day except Sundays and holidays. Further information concerning the course and a complete program of lectures and demonstrations may be obtained from Professor L. M. Pautrier, Clinique des Maladies Cutantees, Faculte de Medicine, Strasbourg.

Alien Insane in New York State.—More than ten thousand aliens were included in the 41,302 patients on the books of the State civil hospitals during the last year, according to a statistical report of the State Hospital Commission. In addition, there were 7,370 naturalized citizens among the patients, bringing the total of foreign born patients during 1923 up to 43.1 per cent. of the entire hospital population of the year. The actual expenditure of the State for its alien patients amounted to more than $5,000,000. The majority of aliens now in the State hospitals have been in the State more than five years and therefore are not deportable under the Federal laws.

February Death Rate Low.—The death rate for February, 1924, was 9.9 in 1,000, the lowest ever recorded for that month among industrial policy holders of the Metropolitan Life Insurance Company. Comparison of the month's tuberculosis death rate with that of February, 1923, shows a drop of thirteen per cent. Organic heart disease and pneumonia rates declined twenty-two per cent., and those for cerebral hemorrhage and Bright's disease, eleven per cent. and fourteen per cent., respectively. Mortality from influenza in February was approximately one fourth of last year's figure for the same month, which brought the peak of the influenza epidemic of 1923. The mortality data strongly support the belief, according to the bulletin, that mental derangement is an important factor in causing suicide. Among 1,081 suicides recorded in 1923, mental disease was definitely specified as a contributory factor in 212 cases, or in one case out of every five.

Washington Psychological Society.—The last meeting of this society for the season will be held on Friday, April 25th. The speaker of the evening will be Professor Leuba, of Bryn Mawr, whose subject will be mysticism.

Medicine and Pharmacy in a Combined Curriculum.—The University of Michigan has combined medicine and pharmacy in a seven year course leading to the degree of Bachelor of the Science of Pharmacy and Doctor of Medicine.

Insulin to Be Manufactured by Squibb.—The insulin committee of the University of Toronto, after a personal inspection of the laboratories of a number of firms in the United States, has licensed the research and biological laboratories of E. R. Squibb & Sons to make and market insulin.

Physiotherapy Aides Wanted.—Civil Service examinations will be held on May 7th and June 18th for physiotherapy aides in the United States Public Health Service. Full information and application blanks may be obtained from the U. S. Civil Service Commission, Washington.

Friday Afternoon Lectures at the Post-Graduate.—The series of Friday afternoon lectures at the New York Post-Graduate Medical School and Hospital will be brought to a close on May 2d by a lecture by Dr. Edward W. Peterson on A General Consideration of Surgery in Children With Special Reference to the Most Important Abdominal Affections.

Master Dermatologists.—Dr. Herman Goodman is scheduled to deliver a talk on Master Dermatologists, Based on Diseases Named After Them, illustrated by original contributions and a series of lantern slides, before the Section in Historical Medicine of the New York Academy of Medicine, Thursday evening, April 24th. Visitors are invited, and discussion will be open.

Cancer Death Rate.—New York has the highest cancer death rate in seven States, according to a report of Dr. George A. Soper, managing director of the American Society for Control of Cancer. While the average mortality rate is 83.4 in 100,000 population, New York's rate is 101. Albany has the highest city rate, with 144, and Yonkers the lowest, 86.9. New York City's is 94.3.

Hospital Equipped With Radio Facilities. — The Bergen County, N. J., Masonic Institutional Association has offered to build an entrance arc to the County Tuberculosis Hospital grounds, to give radio equipment to the hospital and to wire and equip the 100 rooms in the proposed new addition, so that each patient can plug in and get the radio entertainments while in bed.

Age no Guarantee of Immunity to Diphtheria.—That diphtheria may be contracted even by the aged was illustrated by a case recently reported to the Department of Health. The patient was eighty-four years of age and presented marked clinical symptoms with positive findings, on throat culture. Antitoxin was administered and in twenty-four hours the patient seemed to be on the road to recovery when facial erysipelas suddenly developed and the patient died.

Conference of Industrial Physicians.—The tenth anniversary meeting of the Conference Board of Physicians in Industry was held in New York last week. Addresses were delivered by Surgeon General H. S. Cummings, of the United States Public Health Service, and President Samuel Gompers of the American Federation of Labor. Others who addressed the convention were Dr. J. J. Moorehead, chairman of the organization; Dr. W. H. Park, president of the American Public Health Association; Dr. E. Livingston Hunt, professor of clinical neurology at Columbia University; Dr. O. P. Geier of Cincinnati, and Dr. W. Gilman Thompson of New York.

Quinine Needed to Fight Malaria in Europe.—Estimates received by the Health Section of the League of Nations here indicate that Russia needs over 660,000 pounds of quinine to fight malaria this year. Only 110,000 pounds will be available, and this acute shortage is hampering the systematic efforts of the Ceneral Health Department to check the epidemic. In the district of Orechovo-Zujewo eighty per cent. of the children are said to be infected, in the governments of Voronege and Briansk, thirty per cent., and in the government of Rostov, fifteen per cent. Nearly 350 out of every 10,000 people in Russia had malaria last year. In one district, the German Commune on the Volga, 44,600 out of every 100,000 of the population were infected. Malaria is also rapidly spreading in Greece where it is estimated 40,000 pounds of quinine will be required before the end of spring.

Saint Elizabeth's Hospital

WILLIAM A. WHITE, M.D.,
Washington, D. C.

The recent history of the care of the socalled insane and of the development of hospitals for the insane is an interesting one and is rapidly becoming of significance and importance to general medicine.

Following the period when the "insane" were entirely misunderstood and cruelly treated or neglected there came the philanthropic period, during which an attempt was made to rescue them from this cruelty and neglect and during which the great public institutions for their care grew up in this country. This movement occupied the larger part of the nineteenth century and in fact is still going forward. The institutions fulfilled their rescue function admirably and developed great public usefulness. They were, for the most part, built in country districts on large tracts of land and were advantageously located for providing plenty of outdoor life and farming activities for their patients. They were conducted largely along domiciliary lines and incidentally developed a fair degree of therapeutic efficiency. The whole movement, however, had little scientific background and because of the peculiar character of the problem and the isolation of the institutions those who were engaged in the work had few contacts with the general medical profession.

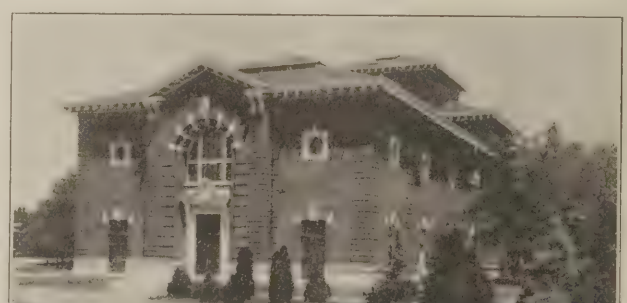

FIG. 1.—Hitchcock Amusement Hall

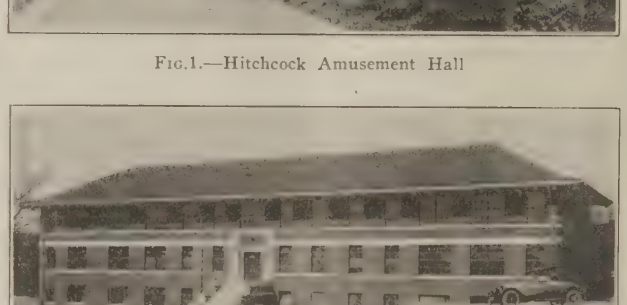

FIG. 2.—The New Blackburn Laboratory. Just being completed. Will house general pathology, neuropathology, serology, psychology, röntgenology, bacteriology, chemistry and metabolism laboratories, and is equipped with amphitheatre, lecture rooms and laboratories for student instruction.

Following this period there developed, in the last portion of the century, a movement to pattern the hospitals for the insane after the general hospitals. The armamentarium of the general hospital was therefore installed—operating rooms, consulting surgeons, dispensary service for eye, ear, nose and throat conditions, dentists, training schools for nurses, and the like. The real impetus that was back of this movement was a feeling that if the patient's physical condition were adequately known, if the state of his organs and their functions could be sufficiently investigated, the riddle of mental disease might be solved. There had been a similar attempt twenty-five years before, when as a result of similar motives, searching investigations were instituted into the pathology of the brain, particularly the cortex, in the hope that systematic serial sections of the brains of the insane would somehow discover the secret.

Making the old State hospital over into a general hospital, however, no more solved the problems of mental disease than did increasing refinements of microscopic examination insure the discovery of the physical basis of a delusion, and these movements expended themselves in producing considerable improvement in the care and the treatment of patients, particularly by bringing a more intelligent caretaker, namely, the trained nurse, to the task, and by insuring a more scientific care of the definitely physically ill in these institutions.

And now comes the next movement in the care of the insane which it is my purpose to illustrate by Saint Elizabeth's Hospital.[1] This movement had its inception in the appreciation, for the first time, of the real nature of mental disease, of its relation on the one hand to physical disease, and at the other extreme its social manifestations—its relation to the comunity—and in between, the importance of understanding the psychological factors, not only descriptively but interpretatively—the importance of psychogenesis. A real appreciation of what mental disease means, not only as it applies to the individual patient, but as a social problem, has resulted in the realization that its treatment is not confined to any one particular method—that in fact the machinery for the treatment of mental disease must needs be the most extensive machinery in the practice of medicine and must include not only all of the ordinary resources of medicine and surgery as such, but in addition all the resources of psychotherapy and the social psychologist.

The tremendous extent of the problem, and the very great cost of bringing to bear, in any one institution, all of the agencies that are now regarded as essential or desirable for the treatment of this class of patients, makes it a condition precedent that the institution should be a large one. Saint Elizabeth's Hospital is an institution with somewhat in excess of four thousand beds and from my experience I very much doubt if an institution materially smaller could command all of these resources. I mean this state

[1]St. Elizabeth's Hospital is a Federal institution, a Bureau of the Department of the Interior, of which Dr. Hubert Work is Secretary

FIG. 3.—Airplane view of the main body of Saint Elizabeth's Hospital. To the right centre the building with the clock tower is the Administration Building. Just over the top of this tower is the Amusement Hall. To the left can be seen the stack of the power plant, which bisects the prison building, beyond which is the aviation field. In the foreground, to the left, are the semipermanent buildings, constructed for the war emergency.

nent in a very concrete and practical way. Inasmuch s of necessity the largest percentage of our patients re chronic patients who are cared for on the domiiliary plan, we are able to give our acute patients nd the acutely ill care in what might be called highowered departments of the institution where the er capita per diem cost is comparable to that in a eneral medical and surgical hospital running all the ay from five to seven dollars a day. Because of the rge number of domiciliary patients, however, a cost f this sort is so distributed that the per capita of he whole institution can be kept within the bounds at will reasonably insure sufficient appropriations. A much smaller institution, without such a large ackground over which to distribute the cost of inensive therapeutics, would develop an average per apita that would make the obtaining of adequate ppropriations practically impossible.

With this brief introduction I will now give a tatement, also briefly, of the makeup of the imortant departments of the hospital and follow with ome pictures of the more important types of ctivity which will largely speak for themselves. The organization chart shows these activities more n detail.

In the first place it will be noted that the hospital s divided into two administrative functioning arts. The one represented at the left of the chart, nd which is presided over by the first assistant phyician, contains all the strictly medical and scientific activities, while the one at the right, presided over by the administrative assistant to the superintendent, contains all of the business and financial activities, including the physical upkeep of the institution.

It will be noted further that the main features of this organization are, aside from its separation into various specific activities, first, that the medical administration as such is, as far as possible, separated from the highly specialized medical and scientific activities, and that the several activities, professional and scientific, instead of being diffused indefinitely, are concentrated in special departments.

In regard to the medical administration, the hospital is divided into several services, each one of which is presided over by a senior assistant physician, whose main qualifications are his administrative ability and his psychiatric experience. These services are correlated and integrated by the clinical directors, one male and one female, each one of which, through the service heads, supervises the care of all of the patients on his or her side of the house respectively.

The strictly professional and scientific activities are grouped as follows: All of the intensive work addressed to the mental condition is handled by the department of clinical psychiatry, with a chief and associates. The psychiatrists, who have specialized in psychotherapeutic procedures, being relieved, as is not usual in institutions of this sort, from the large burden of administrative duties involving numerous letters, notes and discussions with rela-

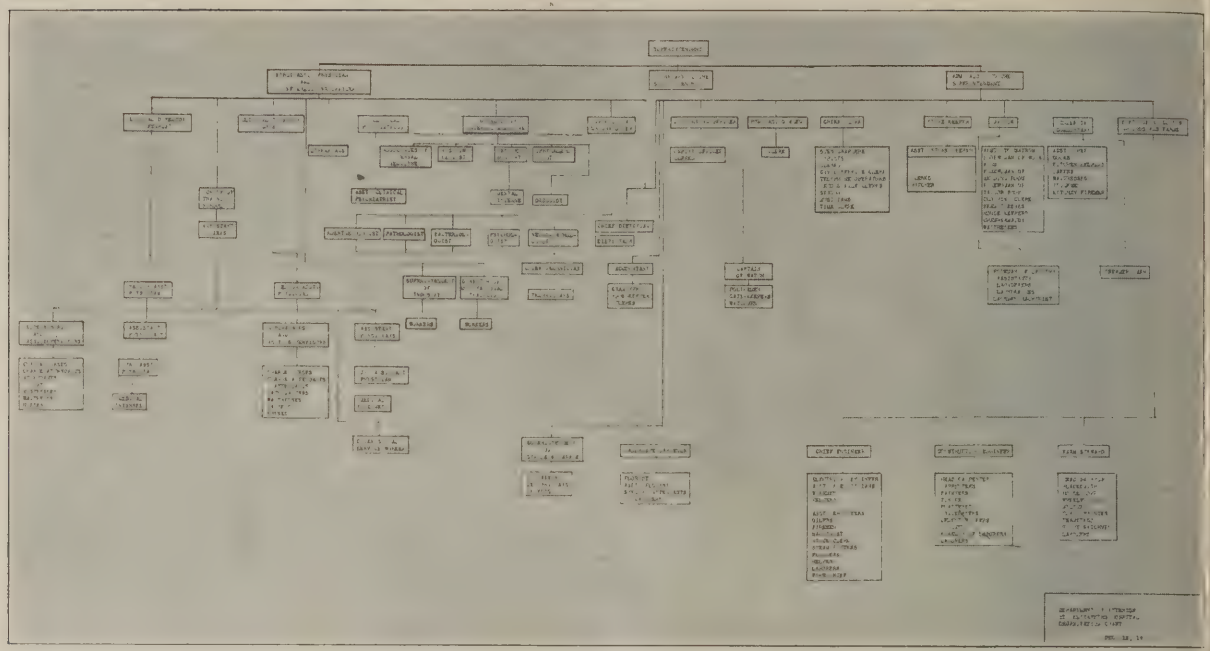

FIG. 4.—Organization Chart of Saint Elizabeth's Hospital.

tives, are thus able to devote themselves intensively to the problems of therapy.

The problems of physical illness are grouped in the department of internal medicine, which is headed by a chief and associates. This department is centrally housed in a building of 140 beds capacity, which is equipped and run precisely as a general hospital. To this building everyone who is physically ill and requires medical or surgical attention is transferred. The department of internal medicine has also the responsibility of the care of the tuberculous and its activities are being extended to cover the improvement of the care of what have in the past been called infirmary cases.

The laboratory activities are grouped together under a director of laboratories.

An outpatient department with headquarters in the city looks after patients on parole or for whom parole is contemplated and assists directly and through its contacts with other social agencies in the return of the patient to his family and in his necessary social readjustments.

In addition to the above and to the training school for nurses, which is similar in its organization and activities to training schools in state hospitals, there is a special school of instruction for attendants, and last year there was organized, with the cooperation of the Veterans' Bureau, a course of instruction in neuropsychiatry for equipping the physicians who are to be stationed in the Veterans' Bureau neuropsychiatric hospitals. At this date forty-four physicians have finished the course. In addition to this, the hospital has trained, during the past year, some thirty nurses and the same number of social workers, also for the Veterans' Bureau.

In addition to all of the features mentioned above there is a special department addressed to the care of the Veterans' Bureau patients and which is at present being financed by the Veterans' Bureau, although under the control and management of the hospital. The reason for this is that the immense influx of Veterans' Bureau patients, approximately one thousand, was too great to be wholly cared for by the hospital on the basis of its usual appropriations.

There is also maintained at the Hospital a Red Cross unit, which functions largely as a social and recreational centre and has attached to its personnel an athletic director who trains the patients in various athletic pursuits, games, etc. The Red Cross unit serves the hospital in addition through its home service section in contacting with patients and their relatives outside the District of Columbia.

The hospital publishes a monthly journal of about sixteen pages called the *Sun Dial,* which is distributed to the patients, containing information and reading matter considered appropriate and helpful and inviting contributions from them. In addition to this there is a circulating library which maintains in constant circulation approximately 2500 volumes among the patient population. This is in addition to the medical library which is composed, in the main of reference works and the current journals of neurology and psychiatry but which also contains the entire catalogue of the Surgeon General's Library and the medical section of the Library of Congress both of which are accessible to the medical staff.

As will be seen by the chart there is a fairly extensive occupational department which employs occupational therapists and undertakes gradually to project the patient into progressively more useful work which can ultimately be utilized after his discharge from the hospital. This includes definite instruction in a number of branches and there is a division in the library devoted to books on the various vocations.

At this date the hospital has 4,136 patients and 1,285 employes, including some fifty physicians. It maintains active liaisons, through medical officers with the Army, the Navy, the Public Health Service and the Veterans' Bureau. It has arrangements for an exchange service of nurses and is making ar-

angements for exchange of interns. Approximately 725 of the employes, including nurses, ttendants, psychiatric aids, occupational aids, and ietitians are employed in the direct care of the atients on the wards. The other 560 employes nclude engineers, electricians, carpenters, plumbers, abinet makers, wheelwrights, bricklayers, firemen, teamfitters, machinists, gardeners, farmers, laborers, tc., to look after the general upkeep of the hospital, he making of repairs and improvements, and the are of the roadways and grounds. The hospital xpends two and a half million dollars a year, and ast year cared for 4,927 patients, at approximately ive hundred dollars per annum per patient.

Foreign Correspondence.

PARIS LETTER

(From our own correspondent)

PARIS, *March 17, 1924.*

MEDICAL ETIQUETTE

Questions concerning the etiquette of the medical rofession are to the fore at present. They relate nore particularly to the contribution of articles to nonscientific publications and to whether it is derogtory to ask Parliament to liken physicians and surgeons to butchers and bakers. The latter matter is f more immediate importance, as a bill is under onsideration which enumerates the trades and industries that are to be protected against eviction by ndlords. The bill is a consequence of the housing risis brought about by the war. Since 1914 virtually o houses have been built in Paris, while the population has increased enormously. Since the Armistice any bills have been introduced to prevent the orcible eviction during a term of years of tenants ho, if turned out into the streets, would have been nable to find shelter. The bill at present before arliament seeks to safeguard the interests of merants and manufacturers who rent their business remises. The Syndicat des Médecins de la Seine, ie medical defence association, has voted unanilously, and has transmitted to the Senate, a resolution asking that such security of tenure should be xtended to physicians and surgeons. The old school f doctors tends to decry comparison with grocers nd plumbers, but the younger school merely shrugs s shoulders. It points out that considerations of iquette must go to the wall in this instance, and that e question is not merely professional but has a ociological bearing. If a doctor, after building up practice during ten or fifteen years, can be evicted mmarily because his landlord refuses to renew his ase in order to rent the apartment or surgery to a erson offering higher rental, he must face ruin. In e first place, it is materially impossible to find her premises; in the second, should a miracle hapen and an apartment turn up, it would be situated another section of the city where a new practice ould have to be built up. Some sections might main indefinitely without a medical practitioner. onsequently, it is to the general interest that a physician should be looked upon as a merchant and a surgeon as a manufacturer.

SIGMA VANQUISHED

Dr. Maurice de Fleury, member of the Académie de Médecine, has raised the other point, is it proper to announce in a lay review or magazine the discovery of a new remedy, thereby raising certain hopes among certain patients? He replies in the affirmative in this specific instance, and in the *Revue de France,* under the title Sigma Vanquished, he publishes an article setting forth the latest progress in combating syphilis. Because of the prevalence and social importance of venereal diseases, Dr. Maurice de Fleury holds the opinion that articles such as the one he has contributed to a review of standing—the *Revue de France* may be compared with the *North Atlantic Review*—have an important educational value. In his contribution he deals principally with the researches of Professor Ernest Fourneau, of the Pasteur Institute and his colleague at the Académie de Médecine, well known for his discovery of stovaine. For years Professor Fourneau has taken up the task of the systematic revision of the researches of Ehrlich and the Frankfort Institute. He devoted particular attention to atoxyl, which Ehrlich had set aside as causing nervous and other troubles. Professor Fourneau and his pupils first ascertained that these troubles were due to impurities in atoxyl, after which they proceeded to a systematic study of phenylarsenic acid and its derivatives. The outcome of years of research, controlled by chemical, physiological and clinical experimentation, was acetyloxyaminophenylarsenic acid, known also as 190 or stovarsol. Fourneau in English means stove, and the professor translates his name to label his discoveries.

It is claimed for stovarsol that it has a curative effect similar to that of arsenobenzol and that its value is more particularly preventive. For this reason Dr. Maurice de Fleury holds that the general public should be immediately advised of its existence. All the more so, he argues, because stovarsol is introduced by the mouth, in the form of tablets or pills, usually of 0.25 grams. In the laboratory hundreds of animals have been inoculated and all those which were not given stovarsol showed symptoms of the malady in full development. Those to which stovarsol was applied soon after inoculation were completely preserved. Two young doctors volunteered to be inoculated by scarification. The same evening and the next day they took stovarsol (the normal dose is four tablets before a meal). Simultaneously two apes were inoculated in the same manner but were not given stovarsol. The apes became syphilitic; the doctors show no symptoms of the disease. Other experiments with human subjects have been made, notably at the Cochin Hospital with thirty-three women. In conclusion, Dr. Maurice de Fleury asserts that "the prophylaxis of syphilis is an accomplished fact."

SOME STATISTICS

Coinciding with the publication of this article, statistics have been printed here relative to the prevalence of syphilis. It is generally conceded that since the World War the rural districts of Europe

are as infected as the cities, which was not the case before. M. Bayet, a Belgian authority, estimates that in his country ten per cent. of the population is affected. At the beginning of the century the proportion was five per cent; it is admitted, however, that improved methods of diagnosis have had their influence in doubling the figure. In Germany the statistics available are still those dating from before the war—eight per cent. of merchants, seven per cent. of laborers, twenty-five per cent. of students. In France Dr. Leredde calculates eighty thousand deaths a year; the number of children born with the taint and who survive is one hundred thousand, while forty thousand die before the age of five years.

SURGEONS FIGHT DUEL

For some little time after the war, duelling was looked upon with disfavor in France. Gradually the practice has been resumed. A surgeon always attends an encounter in his professional capacity, but it is rare that surgeons should themselves fight. There was an exception recently when Professors Broca and Cunéo, armed with swords, faced each other on a lawn at Chantilly, some distance from the capital. Both men are leaders in their profession in Paris and both are past middle age. Professor Cunéo, in the seventh bout, received a slight wound in the forearm and the duel ended. The motive was kept secret, but it is understood that it related to the selection by Professor Broca of his son-in-law as house surgeon of a new hospital. Nepotism is freely charged in the medical profession in this country, where it is the custom to marry "in the profession," as one might say. There are innumerable instances of the favorite pupil of a professor marrying his teacher's daughter. There is a feeling that, in addition to winning a wife, the pupil has the advantage of his father-in-law's influence in his future career.

LONDON LETTER

(*From our own correspondent*)

LONDON, *February 17, 1924.*

MIMICRY OF DEATH

In continuing her series of lectures to women students on Respiratory Exchanges at the London School of Medicine, Professor Winnifred Cullis showed how nature adjusted balance by such methods as yawning, which supplemented the lack of oxygen requisite to the tissues. Professor Cullis drew attention to the need of increased oxygen for all bodies in a state of work. Violent shivering was the automatic response to this incessant demand of the tissues for oxygen. The human body was really similar to a motor car engine, and it was quite possible to calculate the amounts of energy required to be delivered so that a man could be able to remain in perfect health and do work. The absence of oxygen had been found again and again, in animals, to produce a slowing of breathing that was very similar to the state of death. At times a hibernating animal did not take a single breath for a period of fifteen minutes, and it seemed that death had intervened, but warmth had brought the animal back to life.

ALCOHOLISM AMONG PROFESSIONAL CLASSES

According to the tabulation of the Registrar General for England and Wales, "the upper and middl classes" consist chiefly of professional men an clerks. Their comparative mortality figure range from 506 to 863, and has a distinctly lower averag than that of the other social classes. In spite o this, their alcohol mortality is nearly twice as grea as that of the skilled industrial workers. Whil the alcohol mortality of the first three divisions o skilled workmen was seven, ten and thirteen, tha of the corresponding divisions of professional me and clerks was fifteen, twenty-four and twenty-two The three groups with a general mortality of les than six hundred consist of schoolmasters, bank offi cials and of civil service officials and clerks. Thei alcohol mortality is twelve, seventeen and seventeen respectively, so that the schoolmasters alone are com parable in alcoholic restraint, to the average skille industrial worker. Best of all is the group of clergy with a general mortality of 443 and an alcohol mor tality of four.

The division which has a comparative mortal ity of 600 to 699 comprises railway officials, build ers, doctors, lawyers and artists, and their alcoho mortality is sixteen, twenty, twenty-seven, twenty eight and thirty-one, respectively. That is to say, th lawyers and doctors, whose professional duties teac them daily the evils of alcoholism, are themselve among the greatest sinners. Dr. H. M. Vernon, wh read a paper on the subject at a meeting of the So ciety for the Study of Inebriety on January 8th las an abstract of which was published in the *Medica Press and Circular,* February 13th, notes that th percentages of alcohol mortality and general mor tality have an average value of 3.2 for the shop keepers, or the same as that observed in the pro fessional classes. It is twice the percentage alcoho mortality observed in the skilled workman and al most twice that in the unskilled workmen.

What, then, are the causes of these great differ ences? First, the workmen have to pursue occupa tions which are chiefly of a muscular character, an are often carried on in the open air. On that accoun they maintain themselves in a better physical condi tion than the professional men and shopkeepers, an can less readily afford expenditure on alcoholi liquors. But the main reason, Dr. Vernon believes for the difference between the alcoholic mortality o workmen and of the other two classes is due to th form of intoxicants indulged in. The workma takes his alcohol in the form of beer for the mos part, while the professional classes and the shop keepers take theirs in the form of spirits. As spirit contain eight to ten times as much alcohol as coo beer, it is much easier to introduce excess of alcoho into the system. Again spirit drinking is easily in dulged in at all times of the day by those who ca afford to keep a supply of spirits.

RESEARCH IN ANIMAL DISEASES

It is proposed that chairs of comparative patho logy be established in the medical schools in th country in order that medical research workers ma cooperate with veterinary research workers to th benefit of the community at large. The recent costl epidemic of foot and mouth disease has brought t

he front again and emphasized the need for such ooperation. The great stumbling block to effective nedical research here is the lack of funds to prose- ute it with fair hope of success. Investigations in his direction were undertaken by Professors Muir nd Beattie some years ago, but they were discon- inued not because satisfactory results were not being ttained but because the government would not sup- ly sufficient money to continue the work in a proper nanner. Another example of the indifference of overnmental departments to medical scientific re- earch is that of Johne's disease of cattle and sheep, disease which may also affect goats and other orned animals. Up to 1910, in spite of official in- estigations carried out, no success had been reached n cultivating the specific bacillus causing the disease, r of producing a vaccine by which the disease might e diagnosed in its early stages. In 1910, however, n investigation was begun at the Brown Institution, Jniversity of London, and successful results were oon obtained. The causative bacillus was cultivated n a specially prepared artificial medium, and a re- iable diagnostic vaccine made for testing suspected nimals. The Brown being a poor institution all vailable funds were quickly exhausted and an ap- eal was made to the Development Fund Commis- ioners for a grant to enable the work to be properly ompleted. The commissioners, however, declined o make any grant and Dr. Frederick W. Iwort, uperintendent of the institution, applied to the board f agriculture with a view of obtaining a grant from he development fund, as the board acted as advisors o fund commissioners. Again the reply was un- avorable. The vice-chancellor of the University of ondon then made a further application through the oard of agriculture for a grant from the fund in id of research work in animal diseases carried on t the Brown Institution. This was refused, as well s a later application made by a deputation from the Jniversity of London. As a result of these refusals was impossible for the investigations on Johne's isease to be completed in every detail.

Work on other animal diseases has had to be rtailed through lack of funds, and according to r. Iwort it is not now possible for an independent orker to carry out an investigation entailing con- derable expense and he goes on to point out that comparison with this treatment it should be noted at the official workers of the board of agriculture, ho had taken no part in the successful experiments Brown's Institution, received considerable grants r investigating the disease. It appears from replies ven to questions on the subject in the House of ommons that the board of agriculture has no de- re to encourage independent investigations. It ands to reason that if the government desires to sist in the solution of the problems of foot and outh disease they must be prepared to give sub- antial financial support to independent investiga- ons, and in the opinion of Dr. Iwort this can be st done by endowing the posts of competent bac- riologists attached to a university or failing a finite endowment, it is essential that the worker all be assured of a regular annual grant for not ss than ten years and that he shall be left undis- rbed during that time, so that he may give all his oughts and energy to his experimental work.

This latest epidemic of foot and mouth disease has cost in the neighborhood of three million pounds paid in compensation for slaughtered animals, slaughter being the only means known at present for stamping out the disease. This is obviously a penny wise and pound foolish policy and it would certainly pay the government better by far to expend money freely in research work. It has been suggested, perhaps proposed, the writer is not certain, that either the sum of £50,000 shall be offered as a prize for the discovery of the germ or virus of foot and mouth disease or that an island should be set aside for research and that ample funds for equipment and remuneration of workers should be supplied. The problems connected with foot and mouth disease and a host of other human and animal diseases which are, or believed to be, caused by a minute filterable virus, poliomyelitis is caused by such a one, are among the most difficult problems that now confront the bacteriologist. Of course, these problems will take long to solve, but if success were to attend these efforts, the greatest advance in the control and perhaps wiping out of contagious disease will have been made. The establishment of chairs of comparative pathology is an encouraging forward movement, but these chairs must be well endowed and for this much money is required.

VOLUNTARY AND STATE HOSPITALS

The death of Sir Napier Burnett has been a blow to the voluntary hospital system. He was one of its chief supporters and being an excellent organizer his position as director of the Hospital Service of the British Red Cross Society gave him opportunities for making use of his organizing capabilities which it may be said he employed with good effect. His last report on the provincial hospitals of England and Wales—he had nothing to do with the London institutions—showed that they were improving greatly from the financial viewpoint. However, with the advent of a Labor Government, it is expected that a great deal will be heard of state controlled hospitals. In Norwich, a provincial city with a population of 130,000, there has been held recently a meeting to discuss voluntary and state hospitals. The arguments in favor of state hospitals were advanced most strongly by Dr. Cooper Pattin, medical officer of health for Norwich. He contended that it was the duty of the whole community to look after its ailing members. This duty ought to be taught in the schools and in the homes. He thought it was very good of people to subscribe to voluntary hospitals, but the number who did so was limited and their subscriptions constituted an unfair taxation of the few. He was in favor of hospitals being run by the state in conjunction with the local authorities and thought a perfectly satisfactory solution of the problem might be arrived at on that basis. The method, of course, would be to form a hospital committee of the local authority with the power to coapt members having specific knowledge or special interest. From his experience he believed as efficient and economical management could be obtained under a combination of state and municipal authorities as under the voluntary system. For the voluntary hospitals it may be said that schemes put into force to raise money have been as a rule successful. The

contributory scheme has been quite successful. Better methods of organization suggested by the late Sir Napier Burnett have effected great improvements. But the chief point to be urged in support of a continuance of the voluntary system is that state control, according to its opponents, generally means dry rot, brought about by too much red tape. The results obtained by independent investigators, as mentioned in a previous part of this letter, are better than those obtained by state officials. It is argued that state control tends to destroy initiative and it would certainly seem from the medical man's point of view that such control is undesirable. While it has been obvious for long that the voluntary system unchanged cannot continue, there appear to be no valid reasons why this system modified and with the best features retained should not be continued. Paying wards might be introduced everywhere, as it must be understood that hospitals are no longer for the indigent alone but for almost all classes of society. Why should not patients pay according to their means and then the rate burdened inhabitants of cities would not have an added burden for the up keep of hospitals from which they derive no direct benefit. The working man is not the poor man as he was when hospitals were founded. If a person paid for hospital treatment it would help to foster that feeling of independence which is too little in evidence at the present time.

WASHINGTON LETTER

(*From our own correspondent*)

WASHINGTON, D. C., *March 24, 1924.*

Somebody said the other day that Washington has a highly developed sense of rumor, and just now what has hitherto been an endemic in the larval stage has suddenly blazed forth as an acute epidemic. A physician commenting on this condition, said, "It's so bad that it's safer to give out a whiskey prescription than to order mineral oil!" All joking aside, the entire political situation has little interest for the average citizen, and the medical profession is quite untouched. It should be a credit and source of gratification to us that in the investigation of the Veterans' Bureau, whose function is nine-tenths medical, the finger of suspicion never even wavered in the direction of the Medical Division.

All of this by way of making our bow to the other letter writers of the MEDICAL JOURNAL AND RECORD and to the readers thereof, and assure them that so far as the medical world of Washington is concerned, there are no investigations.

CAUSTIC LEGISLATION

To safeguard the distribution and sale of certain dangerous caustic or corrosive acids, alkalies, and other substances in interstate and foreign commerce, Mr. Griest introduced, on March 11, 1924, a bill (H. R. 7822) to be known as the Federal Caustic Alkali or Acid Act 1924. After defining "dangerous caustic or corrosive substance" and "misbranded parcel, package or container," the bill requires labelling with the name of the article, the name and address of the manufacturer, seller or distributer, the word "Poison" in twenty-four point size, uncondensed gothic letters and directions for treatment in case of accidental personal injury by any dangerou caustic or corrosive substance. Penalties are pro vided for infractions of the act which is to b enforced by the Secretary of Agriculture.

CHILD WELFARE PROGRAM

After several months of research and publi hearings, the District Commissioner on public wel fare legislation has completed the draft of the firs of several measures dealing with social welfare wor in the District of Columbia. This first bill create a department of public welfare to supplant existin boards governing welfare agencies and, if approve by the Commissioners of the District of Columbia will be forwarded to Congress for action. It is ex pected that it will be followed by a bill providin for aid for dependent children in their own home and another making school attendance compulsory These three, if enacted into law, will form the firs section of a model child welfare code for the Distric The chairman of the Subcommittee on Social Wel fare of the District of Columbia Committee of th House of Representatives has promised prompt con sideration of the bills.

SURGEON GENERAL CUMMING DECORATED

On March 18, 1924, Mr. Moore of Virginia in troduced House of Representatives Joint Resolutio 22, providing that Surgeon General Hugh S. Cum ming of the United States Public Health Service b authorized to accept and wear the decorations o Officer of the Legion of Honor of France and th Order of Polonia Restituta, Grade Commander o the Star. The resolution was referred to the Com mittee of Foreign Affairs. A similar bill was intro duced in the Senate by Senator Swanson o Virginia.

TO REGULATE CLINICAL THERMOMETERS

House of Representatives bill 7997 introduced b Mr. Kindred on March 17, 1924, and referred to th Committee on Interstate and Foreign Commerc aims to regulate traffic in the clinical thermomete which it defines as "a maximum selfregistering the mometer intended, designed or suitable for use i determining the temperature of the body of man o other animal." The bill provides for the examina tion by the Bureau of Standards of the Departmen of Commerce of all imported clinical thermometer as well as any others intended for interstate shi ment, and provides penalties for the importatio interstate shipment, counterfeiting, or exportatio of such thermometers in violation of the law or th regulations promulgated thereunder.

PARTICIPATION IN PAN AMERICAN SANITARY CONFERENCE

The Senate on March 11, 1924, passed Sena Joint Resolution authorizing the appointment delegates to represent the United States at th seventh Pan American Sanitary Conference, to held at Havana, Cuba, in November, 1924, a appropriated $3,000 therefor. The measure no goes to the House of Representatives for action.

HOSPITAL FUND CAMPAIGN CONTINUES

In spite of the fact that the time set aside for t campaign to raise $500,000 for the Emergency a Casualty Hospitals ended officially on March 2

924, with $281,123.16 raised, voluntary workers vill continue the drive until April 1st in an endeavor o secure the required balance.

WOULD CEDE QUARANTINE SITE

A bill introduced into the House of Representatives by Mr. Kahn of California, on March 6, 1924 (H. R. 7700), authorizes and directs the Secretary f War to transfer to the Treasury Department for uarantine purposes that portion of La Costa Island, Florida, now occupied by the U. S. Public Health Service as a quarantine station under a revocable icense from the War Department.

DEATH OF DOCTOR CROOK

Dr. Harrison Crook, widely known and deeply eloved, was attended to his grave by fellow members of the Medical Society of the District of Columbia, on March 20, 1924. He was a graduate f the Georgetown University Medical School, in ne Class of 1878, and was engaged in active surgical ractice in the Providence and other hospitals of Vashington until 1922, when he retired.

WATER FOR KEY WEST MARINE HOSPITAL

The President, under date of March 18, 1924, ddressed a letter to the President of the Senate Senate Document 72), transmitting supplmental stimates of appropriation for the Treasury Depart- nent for the fiscal year 1924, for providing a water upply at the Key West, Florida, Marine Hospital, 5,500. He concurred in the comments and obser- ations of the Director of the Bureau of the Budget, ho approved the estimate.

REPRESENTATIVE ADDRESSES MEDICAL SOCIETY

Representative John J. Kindred of New York, ho is a physician, addressed the Medical Society f the District of Columbia at its meeting of March 9, 1924, on Eugenics; Its Relation to Mental Dis- ases. Dr. M. L. Bierman spoke on Congenital iaphragmatic Hernia.

ADDITIONS TO CANCER COMMITTEE

Six additions were made on March 20, 1924, to ne Committee of 100, which will direct actively the mpaign against cancer in the District of Columbia pril 7, 1924. The additions include Senator Royal . Copeland, of New York, and William Tyler age, Clerk of the House of Representatives. A refully worked out plan has ensured the coopera- on of practically all of the business and welfare ganizations of the city.

O NEW MEDICAL BUILDING AT HOWARD UNIVERSITY

The Senate has agreed to the conference report n the Interior Department appropriation bill. This easure carried an amendment for $500,000 for the nstruction and equipment of a new medical build- g at Howard University. Unfortunately, the nendment was eliminated in conference.

ORDERS IN THE MEDICAL SERVICES

Medical Corps, U. S. Army Assignments.—Major Charles . Haverkampf to Washington, D. C.; Colonel Henry A. ebber to Atlanta, Georgia; First Lieutenant Edward D. rkes to New York City; Major A. Edward Sherman to rt Sam Houston, Texas; Major John H. Trinder to ot Springs, Arkansas; Colonel Weston P. Chamberlain Panama Canal Zone; Majors John R. McKnight and ouverneur H. Boyer to Walter Reed General Hospital; ajor Wood S. Woolford to Denver, Colorado; Major George B. Foster to Boston, Massachusetts. *Leave,* Major Charles L. Grandy, one month and fifteen days.

Medical Corps, U. S. Navy Assignments.—Commander John L. Neilson, Lieutenant Commanders Henry McDonald and Edward C. White, Lieutenants Frank W. Ryan and Edgar F. McCall, to Marine Corps Base, N. O. B., San Diego, California; Lieutenant Lyman E. Dockery to Receiving Ship, New York, N. Y.; Lieutenant De Witt T. Hunter to Recruiting Barracks, Hampton Roads, Virginia; Lieutenant (J. G.) Albert H. Faber to Naval Radio Station, San Juan, Porto Rico; Lieutenant Arthur D. Hawkins to Naval Hospital, Great Lakes, Illinois.

U. S. Public Health Service.—Surgeon General Hugh S. Cumming took the Oath of Office as Surgeon General of the United States Public Health Service March 10, 1924.

P. A. Surgeon J. W. Mountin, from Jefferson City, Missouri, to Denver, Colorado, and return.

Surgeon J. F. Worley, from New Haven, Connecticut, to Washington, D. C., and return; from New Haven, Connecticut, to Holyoke, Massachusetts, and return.

P. A. Surgeon (R.) D. C. Burkes, from Western State Hospital, Fort Steilacoom, Washington, to U. S. V. H. No. 94, American Lake, Washington.

Surgeon F. M. Faget, from Ellis Island, New York, to Washington, D. C.

P. A. Surgeon J. E. Faris, from St. Thomas, V. I., to San Juan, P. R.

P. A. Surgeon W. T. Harrison, to inspect establishments engaged in the manufacture of biologic products.

Surgeon R. R. Spencer, from Washington, D. C., to Hamilton, Montana, to assume charge of the P. H. S. investigations of Rocky Mountain Spotted Fever.

P. A. Surgeon (R.) G. E. Marchand, from New London, Connecticut, to Washington, D. C.

Surgeon C. L. Williams, from Quarantine, Louisiana, to New Orleans, Louisiana.

Sr. Surgeon E. K. Sprague, from New York City to points in New England States, New York and New Jersey, in connection with his duties as Regional Director of the North Atlantic District.

Surgeon Grover A. Kempf, from Chicago, Illinois, to places in Illinois, in connection with investigations in child hygiene.

Asst. Surgeon (R.) H. T. Floyd, from Baltimore, Maryland, to Oteen, North Carolina.

Asst. Surgeon M. V. Veldee, from Houston, Texas, to Little Rock, Arkansas.

Sr. Surgeon J. C. Perry, from San Francisco, California, to Alpine, California.

Asst. Surgeon O. M. Spencer, from Quarantine, Louisiana, to New Orleans, Louisiana.

Sr. Surgeon J. O. Cobb, from Chelsea, Massachusetts, to New York City for conference.

Surgeon L. P. H. Bahrenburg, from Cleveland, Ohio, to Cincinnati, Ohio.

Surgeon John McMullen, from Louisville, Kentucky, to Cincinnati, Ohio.

Surgeon Carl Ramus, from Evansville, Indiana, to Cincinnati, Ohio.

Surgeon Joseph Bolten, from Chicago, Illinois, to Hot Springs, Arkansas.

Surgeon Taliaferro Clark, from Washington, D. C., to Baltimore, Maryland.

Surgeon L. D. Fricks, from Memphis, Tennessee, to Washington, D. C.

Surgeon W. H. Frost, from Baltimore, Maryland, to Washington, D. C., and return.

Surgeon L. L. Lumsden, from Washington, D. C., to Harrogate and other places in Tennessee.

Surgeon Joseph Goldberger, from Washington, D. C., to New Haven, Connecticut.

Surgeon C. H. Waring, from Hot Springs, Arkansas, to Ellis Island, New York.

Sr. Surgeon (R.) O. B. Mallow, from Chicago, Illinois, to Edward Hines, Jr., Hospital, Maywood, Illinois.

Surgeon (R.) Jefferson B. Latta, from Edward Hines, Jr., Hospital, Maywood, Illinois, to U. S. V. B. No. 92, Jefferson Barracks, Missouri.

Surgeon H. S. Mathewson, from Portland, Maine, to Washington, D. C.

Appointments.—Gregory J. Van Beeck commissioned as Assistant Surgeon, Regular Corps, U. S. P. H. S., effective March 14, 1924. Franklin J. Halpin commissioned as Assistant Surgeon, Regular Corps, effective March 12, 1924.

Book Reviews

THE EMOTIONS

The Emotions. By Carl George Lang and William James. Baltimore: Williams and Wilkins, 1923.

A real contribution is rendered in Volume I of what promises to be a valuable series of monographs edited by Knight Dunlap. This volume contains the original papers which furnished the basis of the James-Lang theory of the emotions. This is the first English translation of Lang's monograph *The Emotions,* which had previously been translated from the Danish into French and German. It is passing strange but none the less true that so well known a work has not been translated from the time of its first appearance (1885). There should be considerable demand for this conveniently arranged monograph. The papers contained are, What Is an Emotion and The Emotions by James, and The Emotions by Lang.

PSYCHOANALYSIS

Papers on Psychoanalysis. By Ernest Jones, M.D. Third Edition. New York: William Wood and Company, 1923.

This is one of the most fundamental works on the subject of psychoanalysis in English. It is more satisfactory than Freud's books which have been translated in America, for Jones sticks closely to Freud, writes lucidly, and avoids the complexities and ambiguities which so frequently mar Freud's translations made in America. In addition, there are many of Jones's original contributions, which have enriched psychoanalytical literature. This, the third, edition contains papers which did not appear in the earlier editions, and which replace others that have been omitted. Anyone interested in psychopathology or in psychoanalysis would do well to read this latest book by Jones.

SURGERY

Operative Surgery. In Three Volumes. By Warren Stone Bickham. With 6,378 Illustrations. Philadelphia: W. B. Saunders Company, 1924. Pp. 900.

There has been for some time a crying need for a system of operative surgery. The first three volumes of Bickham's Surgery have just appeared. This is a tremendous piece of work and it is hard to realize how one author could have so thoroughly covered the scope of general surgery. In Bickham's original one volume work on operative surgery, his anatomical reviews of each surgical condition were excellent. The anatomical description at the beginning of each section in the new edition, with very beautiful and accurate illustrations, can not be praised too highly. In such a comprehensive work as this it is impossible to review completely all the operative procedures.

The author in his introduction wisely states that he does not attempt to cover the entire operative subject, but he attempts to give the standard operative technic for the surgical lesion.

One is glad to see in the first volume a good description of the Carrel-Dakin technic and of the later methods of local anesthesia, including paravetebral and parasacral. The publishers have been most generous in their allowance of numerous photographs. The chapter on artificial limbs is very illuminating and should be studied by every general surgeon.

It is always easy to criticize the omissions in any large work, and in these volumes one notes certain omissions that are to be regretted. For instance, in his description of tendon suture, there is no notice of the Bonnell clamps, which certainly to the general surgeon are a great aid in preserving tendons. The article on bone cavities makes little mention of the recent methods of sterilization of the cavity by Carrel-Dakin and secondary filling of the cavity with fat transplants or pedicle grafts. Also one observes in the section on bone grafts no mention of the osteoperiosteal grafts of Ollier, and DeLangeniére. The reviewer believes that these subjects should be mentioned as they have proved to be valuable additions in their particular lines and have been used long enough to become standardized.

The reviewer feels that if the succeeding volumes are as satisfactory as the three now at hand, this work will be a very necessary adjunct to every surgeon.

POTT'S DISEASE

La Tuberculose Vertebrale—Mal de Pott. By Dr. Lance, Assistant d'Orthopedie a l'Hôpital des Enfants Malades, Paris: Ernest Flammarion. Pp. 246.

This is a most interesting volume, not only to the orthopedist, but to surgeons in general and even to the general practitioner. In the chapter on etiology the author makes some interesting statements, admitting that tuberculosis of the vertebral column can no longer be considered hereditary, but that it is always an acquired affection and that its origin may be the tubercle bacillus of the bovine or human type. He states that in the bovine race in France from fifteen to twenty per cent. and in certain other countries as high as fifty per cent. are afflicted with tuberculosis. The author sees no danger from the ingestion of meat from tuberculous cattle but great danger from the ingestion of milk from tuberculous cows.

The frequency of Pott's disease as compared with disease in other bony regions of the body, he ascribes to the spongelike structure of the vertebræ. The various deformities resulting from the tuberculous lesions of the vertebræ are well described and illustrated by numerous cuts and photographs. With the aid of a great many x ray pictures the gradual process of destruction in the cervical, dorsal and lumbar regions is shown clearly. In the chapter on diagnosis the author emphasizes the importance of early recognition of the disease and justly calls attention to one of the earliest symptoms, namely, rigidity of the vertebral column. Under differential diagnosis he mentions osteomyelitis, the hysteric and the syphilitic types of Pott's disease, and congenital malformations. He very wisely says that no positive diagnosis should be made without an x ray picture.

Under treatment nothing new is offered. In the chapter on surgical treatment it is gratifying to see that credit is given to the works of our own Hibbs and Albee. A special chapter deals with Pott's disease in infants and Sayer's interesting illustrations showing how the diagnosis should be made, are

reproduced. The method of determining the flexibility of the vertebral column is given.

The remaining chapters deal with Pott's disease in the adult and the aged. Considering the treatment of the former the author deplores the lack of hospitals at the seashore for such cases among the poorer classes, for the lengthy and costly sojourn in a private institution is making a successful treatment for the masses virtually impossible. In the chapter on Pott's disease among the aged, several different types are described. In the classic form, due to the formation of an abscess, the diagnosis is often difficult, because there may be no pain and on account of the age of the patient one seldom thinks of Pott's disease. Secondly, there is the nervous type with its numerous symptoms, pseudoneurology, paraplegia, etc.; thirdly, the rheumatic type, and fourthly, the pulmonary type. Lastly, the author describes Pott's disease in the pregnant woman and makes the statement that repeated confinements and breast feeding of the infant may dispose to tuberculosis of the vertebræ, but he admits the rarity of this as an etiological factor. As to allowing a woman with an old latent Pott's disease to marry and bear children, he thinks that permission can be granted providing there are no cardiac or respiratory complications. On a whole, the book is an excellent and concise exposition of what is known today of the etiology, diversity of types, and treatment of Pott's disease.

MENTAL EVOLUTION

Man's Mental Evolution, Past and Future. By Harry Campbell, M.D., F.R.C.P. London: Baillière, Tindall and Cox, 1924.

In this small volume the author has attempted the ambitious task of discovering the factors which have determined man's mental evolution. Having stated what he believes these factors to be, he discusses the question of how far they are still in operation and he endeavors to forecast man's future destiny. This appears to be the first serious attempt to deal with these fascinating problems.

Campbell contends that mental evolution has to be studied on the same lines as morphological evolution, and that the problems for solution are just as susceptible of solution in the one case as in the other. He falls foul of those biologists who belittle the influence of selection in biological evolution, insisting that without selection organic evolution would be impossible. He repudiates Bergson's assumption that the evolution of species takes places in response to an *élan vital*, arguing that, just as in the evolution of the bicycle, only a few of the many inventions, natural variations, have survived the selective scrutiny of the public, so for every organic variation which has survival value, many are eliminated as harmful, and that organisms have thus at least as great an innate tendency to retrogress as to evolve. The argument appears incontrovertible.

The author lays down the maxim that mental evolution takes place by the natural selection of individuals possessing enhanced mental endowment, but only when this confers survival value. He is, however, careful to point out that enhanced mental endowment does not possess survival value except under certain conditions. These conditions are that the individual possessing it shall be anatomically equipped with the means of giving effect to the added endowment, and that the environment shall afford the necessary scope, or opportunity, for the extra intelligence.

These propositions he illustrates by reference to the fish, the bird, the monkey, the large ape, and man. Heightened intelligence would not benefit the fish, both because the creature lacks the anatomical equipment, in the shape of prehensile digits, necessary to give it effect, and also because the watery medium in which it lives affords no scope for the exercise of superior intelligence. The bird, with superior anatomical equipment and wider scope, has reached a higher mental level, but both these favoring conditions are restricted and thus the survival value is kept to a definite low level. The tailed monkey has attained to a comparatively high level of intelligence, owing to the high survival value which the possession of hands has put upon intelligence. On the other hand, its essential arboreal life affords but limited scope for the exercise of this enhanced intelligence, the survival value of which has been permitted to advance beyond the simian level. In the case of the large anthropoids, the scope for intelligence has been greatly widened by a semiterrestrial life which, however, has limited the survival value of intelligence to the anthropoid level. On the other hand, when the prehuman anthropoid ape abandoned the forest and became a purely terrestrial animal, he was afforded a maximum scope for the exercise of intelligence. Superior intelligence then came to possess a survival value such as it had never possessed before, and this led to the evolution of man such as we know him today.

The author believs that directly man's anthropoid ancestor left the forest, he became a hunter, seeing that the gorilla is now known to hunt small game. He contends that the career of hunting vastly increased the survival value of intelligence, that the prehuman anthropoid, lacking the equipment for slaughter, anatomical and instinctive, of the tiger, he was compelled to rely upon his wits in hunting his prey. For which instinct, he had to substitute strategy; for natural weapons, weapons made by hand. When the tribal stage was reached, polygamy further favored mental evolution. "The chief of a tribe needs courage, promptitude, tact, a nimble intelligence, a quick apprehension. We may be sure that the consistently wise man, the man who uniformly proves himself to be in the right, the clear-seeing, farseeing, resolute brave man, ever ready to take the initiative and to share the common danger, will come to be looked up to, feared, obeyed, in short, to be recognized as a leader. If to these qualities he adds a sense of justice, he will not only be feared but respected, possibly loved. This is the type of man who rises to leadership, kingship; who leads his tribe to victory and extends his dominion and power. It surely cannot be doubted that among normal tribal people such a man tends to leave more than the average number of offspring."

The author advances intertribal law as a third factor in favoring man's mental evolution. Modern warfare is dysgenic, in that it eliminates the physically fittest and bravest, those least careful of their skins. It has also to be observed that the total effect

on the population is much the same for the victor and the vanquished. In intertribal warfare, on the other hand, all or practically all the men of the tribe take part in the fight, but the percentage loss of the vanquished is generally much greater than that of the conquerors. Defeat may mean practical annihilation of the vanquished, and the ceaseless destruction of inferior by superior tribes has favored mental evolution.

As regards racial differences of intelligence, the author points out that we are apt to take our standard of European intelligence from the classes rather than from the masses. "The comparatively high intelligence of the upper classes in Western Europe leads to a selective mating of the most intelligent, thus intermarriage of the most intelligent members of the community is more favorable to the production of exceptionally gifted offspring than unions among primitive people where no such selective influence is at work. The intermarriage of the most intelligent among civilized communities must, one would think, increase the number of exceptionally gifted among them." May it not be "that the average redskin or the negro is as intelligent as our own unskilled workers and more intelligent than our unemployable"?

Campbell applies the same principle of survival value to the evolution of the instincts and the feelings. "As to the mode of evolution of those feelings, dispositions which are adaptive, which constitute the basis of adaptive instincts, there can be no doubt that they have evolved on the same lines as intelligence, that is, by virtue of their survival value, and moreover, that such survival value has implied the evolution of the appropriate anatomical component needful to give effect to their promptings. All the combination of feeling dispositions pertaining to the adaptive instincts of subhuman animals, and the corresponding feeling dispositions in ourselves have arisen by the selection of feeling disposition possessing survival. It is unconceivable that they can have come into being as the result of a prophetically endowed *élan vital,* acting independently of selection." The supposition, e. g., that the slaughtering instinct of the tiger has evolved in response to an *élan vital,* an innate 'urge,' implies prophetic vision, the ability to look into, and make provision for, an unknown future. Does it follow, asks the author, that because man has advanced mentally in the past, he will continue to advance in the future, that a veritable superman will emerge? It is, he maintains, just a question of the survival value of superior mental endowment, intellectual or moral. Intellectual superiority, no longer having any survival value, the least intelligent section of the community being the most prolific, has for the time being at least come to a standstill. If, however, superior intelligence continued to possess survival value for a sufficiently long period, a race of supermen would evolve. While the intellectual future of man gives little promise of advance, the author is more hopeful of man's moral future. The monograph ends with the notable pronouncement, "I have sought to lift the problem of man's mental evolution out of the region of vague surmise, and to show that it comes well within the province of science, and that it can be reduced to simple terms. There is, it seems to me, but one problem which transcends it in interest, that stupendous problem whether our brief career here is the beginning or end of us, or whether we are to live forever under other conditions. There we seem to pass beyond the realm of the knowable and to stand at the gate of the unknown and the unknowable."

Dr. Campbell has compressed into somewhat over seventy pages of printed matter, a most thoughtful consideration of one of the most fascinating problems of life, a problem it may be said, that Darwin himself did not attempt to solve. No one is better equipped than the author for placing the subject before the reader in clear terms and with complete knowledge, as it is a subject he has almost made his own. As said before, it is the first serious attempt to grapple with the question of man's mental evolution and to endeavor to lift the veil which covers or obscures man's future destiny. The arguments brought forward carry great weight, as the deductions formulated are founded upon a sound basis and the explanations are satisfactory. The book gives one to think and is written in a highly attractive philosophically scientific manner. In fact it is eminently readable, unlike many scientific works of less real value. It is to be hoped that this review and the exposition given of the author's salient points may lead to the wide reading of a book which will well repay a close study.

DIAGNOSTIC TECHNIC

Diagnostische Technik für die ärztliche Praxis. Ein Handbuch für Arzte und Studierende. By various authors. Herausgegeben von Professor Dr. Julius Schwalbe, Geh. San.-Rat. Mit 380 Abbildungen. Leipzig: Verlag von Georg Thieme, 1923. Pp. xv-851.

This work on diagnostic technic, written under the collaboration of a number of the greatest specialists in their respective fields and the editorship of Schwalbe, is a companion book to the similarly planned book on therapeutic technic also edited by Schwalbe. It is unique in that it covers the entire field of medicine and it appeals especially to the general practitioner and the medical student, as well as to specialists and workers on scientific problems in hospitals. The diagnostic problems of the general practitioner are given special attention but other features, with which he should be acquainted but which are too elaborate and technical for routine practice, are also discussed and described. Wherever the diagnosis and differential diagnosis are important the necessary technic of the required tests is also given. An up to date bibliography is appended to each chapter. The first portion of the book deals with the general technic of examination of the patient and the various procedures used, such as physical examination, röntgenography, microscopy and bacteriological and immunological examinations. The special portion of the book is concerned with hematology, endocrinology, the examination of the respiratory, circulatory and digestive systems, metabolic studies, the study of the kidney, male sexual functions, the nervous system, surgery, gynecology obstetrics, ophthalmology, otology, the upper respiratory tract, the teeth, dermatology, venereal diseases, acute infectious diseases, chronic tuberculosis, intoxications, and the examination of children. This work may very satisfactorily be used as an aid in diagnostic technic.

Medicoliterary Notes.

A bibliography on social and industrial psychology has recently been compiled and published by the Russell Sage Foundation.

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In his book entitled The Minds and Manners of Wild Animals, Dr. William T. Hornaday, director of the New York Zoological Park, tabulates the relative intelligence of wild animals as he has observed it. The chimpanzee scores 925, the lion 725, the tiger 575. A lion raised in captivity is the most good natured and amenable of all the beasts.

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The teachers of physical education of Mexico have formed an alliance for better education and for the general development of sports in the republic.—*Nation's Health.*

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Incompatibility in Prescriptions and How to Avoid It is the title of a pamphlet by Thomas Stephenson, D.Sc., editor of the *Prescriber* (Edinburgh). He quotes a definition of incompatibility as "any intentional change which notably interferes with the elegance, usefulness, or safety of the prescription"; and divides his discussion of such changes into the chemical, physical or pharmaceutical, and therapeutic phases.

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A recent report of the New York City Sanitary Bureau for 1922 gives some interesting data. One would not suppose it possible that among dead animals removed from the streets could be three elephants, two camels, three seals, and one alligator, one bear, one lion and one deer. The total of dead animals removed was 307,603. Dog bites to the number of 4,538 were reported and 165 cat bites. Another section of the report states that samples of air were collected from subway cars during July and August for estimating carbon dioxide content. No report is made of what was found.

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National Safety News for October, 1923, contains a full and valuable list with description and other information of approved safety devices for that year.

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Pneumonia and its prevention is the subject of the *Illinois Health News* for January. This issue of the bulletin makes a very practical little guide for popular use.

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Even New Zealand, which now has the longest life span of the world, has its health problems. A recent report states that ordinary inspection of school children has revealed that ninety per cent. of them have carious teeth. Thorough examination would probably have shown a much larger proportion. The ratio of schools near sweet shops to those remote was 100 to 73.5.

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In 1923 the Pennsylvania State Department of Health inaugurated a campaign for the immunization of children against diphtheria. This resulted up to June 1st in administering toxin antitoxin to 42,519 children.

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Crazy Man, the title of a recent novel by Maxwell Bodenheim, is reputed to tell the story of an actual person who lived in New York City a few years ago, who won the interest and respect of many, and who is now in an institution for the mentally diseased. The book tells the story of a reformed thief who tries to impress upon the world his fantastic visions, sometimes with truth underlying them, and of a girl who is a professional hostess at a dance hall of rather ill repute.

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A recent issue of the *New Republic* reprints from Julian Huxley's *Essays of a Biologist*, published by Knopf, a discussion of sexual sublimation from the biologist's point of view. Psychoanalysis and its results are considered and criticized as of doubtful value as a part of education in sex matters. "Analysis," writes Huxley, "constitutes a serious surgical operation for the mind . . . and we do not want to perform this operation on healthy people any more than we want to open their abdomen to see that their viscera are normal."

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A French government report gives the estimated number of cripples resulting from the World War as more than ten million. The country with the largest number is Germany, with 1,537,000. The number in the United States is given as 157,000. France ranks second with 1,500,000, and Great Britain third with 1,170,000.

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Salaries and tenure of office of city health officers is the subject of an enlightening study by State Commissioner of Health Matthias Nicoll, Jr., of New York in the *Nation's Health* for January. Commissioner Nicoll shows that the smallness of the usual salary of such officials means that they cannot long make so great a financial sacrifice, with the result that nearly one third have held office for one year only, and more than one half for five years or less. This is a labor turnover that costs both money and efficiency.

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The first annual Safety Night for professional auto drivers was held recently at one of the New York theatres under the auspices of the Bureau of Public Safety of the Police Department. There were addresses on various phases of the subject of safety by prominent men and an all star vaudeville bill.

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The *National Health Series* is a set of twenty volumes on various health topics and problems published by Funk & Wagnalls under the editorship of the National Health Council, with headquarters in New York City.

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Professor Bourget of the Paris Academy of Medicine is reported to have addressed that august body lately on the subject of the relation of personal ugliness or disfigurement to neurasthenia and other mental disorders. He emphasized the great importance from the medical point of view of socalled beauty surgery and presented some remarkable cases to illustrate his opinions.

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The *Living Age* tells us that in Turkey, contrary to common belief, it has become too expensive to maintain a harem, so a ban on polygamy has recently been pronounced in Angora. A town in Anatolia has gone further and limited the expense of the marriage ceremony. There must be no music except a drummer, and he must obtain a legal permit; only three vehicles may be sent to transport the bride, and the fees for these are strictly fixed; tips are forbidden, the bride cannot be adorned with gold coins, carriages must not be decorated, and the bride must not be given more than two suits of clothes and one set of furniture, and wedding presents from relatives are taboo.

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The *Nation's Health* for January has an article of unusual interest on the public school clinics of North Carolina. Probably the most important are the dental clinics because much of the population of that region have notably poor and defective teeth, the result of long neglect through ignorance of care.

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The U. S. Department of Commerce has announced that 1,101,863 deaths occurred in 1922 within the death registration area of continental United States. This represents a death rate of 11.8 per 1,000 population as compared with 11.6 in 1921. The slight increase in the rate is attributed to the increase in the rate for influenza and pneumonia from 99.8 per 1,000,000 population in 1921 to 133.5 in 1922. Some of the other diseases for which the rates increased were cancer, diabetes, diseases of the heart, nephritis, cerebral hemorrhage, automobile accidents, falls and burns. A marked decrease appeared for diarrhea and enteritis, under two years of age, all forms of tuberculosis, typhoid fever, puerperal septicemia, whooping cough, scarlet fever, drowning and suicides.

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Organized play, theory and practice, is the subject of a work in two volumes by Wilbur P. Bowen and Elmer D. Mitchell, published by Barnes, New York. Volume I deals with the history of the play conception, and the psychology and philosophy of play; Volume II is purely practical, containing lists and directions for games.

Abstracts from Current Literature

RADIOLOGY

Light in the Treatment of Cutaneous Tuberculosis.—J. H. Sequeira (*British Medical Journal,* September 22, 1923) draws the following conclusions: 1. We must carefully distinguish between the local application of concentrated light to lesions and the light bath. 2. The best results in the treatment of lupus vulgaris are obtained by a combination of local and general treatment. The former requires the application of concentrated actinic light to the lesions. The light bath is the exposure of the nude body and limbs to the rays of a large arc lamp. 3. The best illuminant is a large carbon arc working at fifty amperes, which is not enclosed as an envelope cuts out some portions of the rays. 4. The amount of pigmentation is an index of the reaction to the radiation, and nothing more. 5. As a general rule the greater the pigmentation the better the results. 6. Ninety per cent of all cases can be cured by a combination of the light bath with local phototherapy. The efficacy of local treatment is intensified by the application of light to the whole surface. 7. In addition to the healing of tuberculous skin lesions, sinuses, etc., the patients increase in weight, their general health improves to a remarkable degree and their mentality is most favorably influenced. 8. It appears likely that in certain subjects the treatment may require repetition at intervals. 9. Apart from tuberculosis the light bath can be recommended as a general tonic.

Thorium X in the Treatment of Myeloid Leukemia.—C. Aubertin (*Bulletins et mémoires de la Société médicale des hôpitaux de Paris,* January 17, 1924) had noticed that in cases of chronic rheumatism treated with thorium X a marked fall in the leucocyte count, to a minimum of 1500, took place, with polymorphonuclear leucocytosis and eosinophilia. He reports a case of myeloid leucemia in which seven weekly subcutaneous injections of from two hundred to four hundred micrograms of thorium X were given, with the result that the leucocytes dropped from 22,500 to 2,700. The erythrocytes meanwhile also dropped from 2,850,000 to 1,890,000. Three x ray treatments were given later. After cessation of treatment the leucocytes continued to fall, down to 1,500, which figure still obtained five months after the last injection of thorium X. The percentage of neutrophile myelocytes was then 5.5 per cent., against 29.75 per cent. before treatment. The spleen began to subside only after a long interval after cessation of treatment, then became much reduced in size. Ten months after the beginning of treatment the leucocytes were still at 3,300, while the erythrocytes had returned to their original level. Like doses of thorium X had been given in rheumatic cases without causing any special anemia; apparently the erythrocytes in leucemics are more vulnerable to thorium X than in subjects with normal blood. The thorium X treatment of leucemia is a simple one; although the preparation deteriorates, a physician in an out of the way place could easily receive it regularly by mail. The treatment seems easier to manage than benzol treatment.

Advantages of the "Loading Slot" in Radium Emanation Implantation.—Joseph Muir (*Journal of Urology,* March, 1924) says that the implantation of radium emanation seeds in connection with cystoscopy, and otherwise, has been practised for a period of about ten years. The technic employed is stated briefly as follows:

First, the fixing of the seed in the point of the needle with vaseline; second, the introduction of the needle itself through the cystoscope; third, the implantation of the seed by means of the plunger.

Using the method outlined above, a considerable amount of time is consumed, as the implanter had to be completely withdrawn for each implantation. Because of this, visual observation was continually interrupted, and consequently the location of successive implantations was not only a matter of uncertainty, but the implantation of successive seeds in the same puncture channel was practically an impossibility; in other words, the exact distribution of seeds, and the size of the dose was a matter of guesswork.

All these shortcomings may be obviated by the use of the author's flexible radium seed implanter, with the loading slot. Using this instrument, a large number of seeds may be implanted in a much shorter space of time, with less traumatism, and with few portals of entrance. The field of implantation may be mapped out with accuracy under constant visual observation, and successive seeds can be imbedded in the same puncture channel, to any depth, and at any interval with mathematical accuracy. Therefore, it is obvious that the flexible radium seed implanter provides the highly desirable factor of uniform distribution of radium emanation seeds, i. e., radiation, and in addition avoids the former necessity of surface radiation. This latter supplemental radiation formerly had to be resorted to because of the possibility of imperfect distribution.

The Influence of Radiant Energy upon the Development of Xerophthalmia in Rats.—G. F. Powers, E. A. Park, and Nina Simmonds (*Journal of Biological Chemistry,* April, 1923) presented a remarkable demonstration of the beneficial influence of sunlight and out of door air upon the organism. They fed rats on diets which under ordinary conditions of room light would bring about the development of both rickets and xerophthalmia, and of xerophthalmia alone. Animals so treated, when exposed to the quartz mercury vapor lamp for thirty to sixty minutes, though they were not prevented from the development of xerophthalmia, were improved in bodily vigor to a very limited degree. In rats exposed to direct sunlight, xerophthalmia did not develop, with one exception, until the rats in the other groups had contracted the disease and died. None of these rats had rickets. These experiments emphasize that sunlight with such factors as may be closely linked with it, has wonderful power to promote health, bodily vigor, and longevity in animals otherwise unable to adapt themselves to markedly adverse environmental conditions.

Artificial Light Treatment of Lupus and Other Forms of Tuberculosis.—Axel Reyn (*British Medical Journal,* September 22, 1923) summarizes his conclusions as follows: 1. The nonoperative treatment is the principal one in cases of surgical tuberculosis, not only in children but also in adults. 2. Light baths (sun or artificial) are indispensable in the nonoperative treatment of surgical tuberculosis. 3. The carbon arc light can fully replace sunlight, and is much superior to the mercury arc light. 4. Sanatoria in mountain heights, as well as at the seaside, should have artificial light baths at their disposal. 5. In the treatment of lupus vulgaris concentrated chemical light is absolutely indispensable, and it is of the greatest value to combine local treatment with light baths.

Silhouette Radiogram.—A. P. Bertwistle (*Lancet,* October 6, 1923) prepares röntgenographic silhouettes by scratching the negative with a pin, following carefully the skin outline. From this a print is made and the background is blocked out with India ink. The negatives usually show a clear outline. This procedure results in röntgenographic silhouette, which has the properties of a röntgen plate and a clean cut silhouette, which brings out clearly the deformity or otherwise of the soft parts. The advantages claimed for this procedure are the following: 1, a more striking clinical picture, often rendering a photograph unnecessary; 2, the ease with which it may be obtained; 3, the position in which the limb is photographed is indicated and 4, the cause of the whole deformity may be analyzed at a glance.

Effect of X Rays of Different Wave Lengths upon Some Animal Tissues. Proof of Differential Action.—S. Russ (*Lancet,* September 29, 1923), by means of experiments, in which a comparison was made of the amounts of energy liberated in the tissues by hard and soft rays, showed that when equal amounts of x ray energy are absorbed from beams of different wave lengths by animal tissues, the reactions of these tissues may differ considerably in degree and possibly to some extent in nature. The experiments show that a bigger differential effect between hard and soft x rays exists for the skin of the rat than for the tumor cells. Provided this also holds for the human subject it is one argument for the use of very hard x rays or gamma rays when tumors at a considerable depth below the skin have to be irradiated. The conclusion would perhaps be just the reverse in superficial conditions not involving the irradiation of normal skin. The result also raises the question whether the specification which has been adopted

by Seitz and Wintz for expressing the carcinoma dose in terms of the skin dose is sufficiently rigorous, for this may be a function of the wave length. The two main results obtained are that about six times as much short wave length energy as long wave length energy must be expended in a layer of skin in order to produce equal reactions and that this factor falls to about 2.6 in the case of the tumor.

Diagnostic Findings in Pyelography and Pneumoradiography.—A. Ritter and R. Allemann (*Schweizerische medizinische Wochenschrift,* October 4 and 11, 1923) applied the Rosenstein procedure of pneumoradiography of the kidney bed at times in addition to pyelography in thirty cases in which the differential diagnosis was difficult. In a series of cases of nephroptosis, malformation and dystopia, tumors, tuberculosis of the kidney and hydronephrosis, in which the clinical diagnosis was uncertain, it was readily made after the use of these procedures. The latter were useful in the differential diagnosis of tumor and constriction of the liver, tumors and hydrops of the gallbladder, tumors of the stomach and intestine, and of the mesentery, torsion of the pedicle of an ovarian tumor, etc., and in the differential diagnosis of renal affections themselves, such as hydronephrosis, pyonephrosis, tumor, solitary cyst, and tuberculosis. This technic is superior to pneumoperitoneum, especially in marked formations of adhesions in the abdominal cavity. Air and carbonic acid gas embolism did not occur. The contraindications include large and infected hydronephroses, paranephritic abscesses, extensive cavernous phthisis and neuroses.

Röntgen Ray Treatment of Eczema.—William J. Macdonald (*Boston Medical and Surgical Journal,* December 6, 1923) says that acute eczema will clear up on suitable local treatment, diet and rest, but it is best to supplement this with the x ray, which offers a rapid, clean, and tolerably certain cure in most cases. The diet must always be corrected, excess of carbohydrates and eczema are mutually related.

Phototherapy of Migraine.—Leopold Freund (*Wiener klinische Wochenschrift,* October 18, 1923) obtained such excellent results with phototherapy in migraine that he believes its use to be justified. He believes in the use of long wave rays of light. Naturally, this form of treatment is indicated only in the spastic form of hemicrania, but not in the angioparalytic form nor in those patients who cannot bear the action of the light during the attacks.

OPHTHALMOLOGY

Glaucoma.—G. P. Hawker (*Lancet,* October 13, 1923) states that there is no disease more difficult to diagnose than chronic glaucoma, and only by weighing all the signs can a decision be made between it and early optic atrophy and retrobulbar neuritis. The field of vision in early glaucoma shows contraction of the nasal side, while in optic atrophy it is concentric. The tension should be taken if possible with a tonometer. In shallow glaucomatous cups the disc is pinkish, while in optic atrophy it is pale. There is, however, always some atrophy of the nerve with a cupped disc, and between this atrophy and simply atrophy with a slight depression there is much scope for error in diagnosis. The author has seen a fairly advanced case of glaucoma without any visible change in the disc. Chronic glaucoma is almost as common a cause of loss of sight as cataract and if this fact is borne in mind many cases can be treated while there is yet time. Acute glaucoma is comparatively rare.

Oxycephaly in Eye Disturbances.—A. Léri (*Presse médicale,* January 19, 1924) asserts that the ocular disturbances in oxycephaly appear to be due to at least three causes: 1, collapse of the floor of the middle fossa at the base of the skull, with disappearance of the sphenoidal sinus and tilting of the sphenoid bone, making pressure at the bottom of the orbit and thus causing protrusion of the eyeballs and sometimes compression of the optic and oculomotor nerves. 2. Intracranial hypertension, proved to exist by x ray evidences, such as disappearance of various bone sinuses, "digital" impressions in the frontal and parietal regions and impressions of the large venous sinuses in the cranial bones, as well as clinically by increased pressure of the cerebrospinal fluid and disappearance of brain tumors in certain cases. 3. Cranial deformity, apparently the result of premature synostosis of the coronal and sagittal sutures, the latter ascribed, in turn, either to a basal meningitis or to rachitic osteitis. The evidences of meningitis or rickets do not explain all the cases. On the other hand, adenoid growths, and in a general way, the nasopharyngeal infections which are common in infancy, seem to be one of the essential causes of the disorder. In the newborn child the nasopharynx communicates extensively and directly with the middle section of the base of the skull. These infections are thus capable of causing by direct extension either the basal meningitis or osteitis which lead to the premature synostosis and which have hitherto been erroneously considered as primary. There is thus produced a selective collapse of the middle section of the base of the skull which contrary to prevailing opinion, is not due to intracranial hypertension, for such a collapse does not occur in any other variety of intracranial hypertension, including brain tumors, hydrocephalus, and Paget's disease. There occur, furthermore, cases of optic neuritis similarly caused and featured radiographically by exclusive collapse of the middle section of the base of the skull without any of the other osseous deformities of oxycephaly. The meningitis and osteitis following nasopharyngeal infections add a third inflammatory cause to the two mechanical causes, viz., collapse of the base and intracranial hypertension, which induce the ocular disturbances of oxycephaly. The knowledge of these causes leads to certain definite therapeutic indications: Decompression or callosal puncture to combat the hypertension, and disinfection and curettage of nasopharynx and adenoid vegetations. The excellent results obtained through operation on the adenoids, even at a late stage, by Gradenigo show how much may be expected from these procedures.

Purtschner's Indirect Injury of the Retina.—A. Vogt (*Schweizerische medizinische Wochenschrift,* October 11, 1923) states that Purtschner's injury of the eye, associated with retinal hemorrhages and typical white, cloudy superficial foci, is due to a fall or a blow on the head as a result of an acute increase in blood pressure within the skull. There is no sign of a direct injury to the bulb of the eye. The author describes two cases and discusses the differential diagnosis of retinal hemorrhages from compression of the body and of the Berlin cloudiness of the retina due to contusion, the picture of which is entirely different. The cloudiness is not superficial and does not cover the blood vessels as in Purtschner's indirect injury and it disappears after several hours.

Curability of Trachoma by Injections of Copper Sulphate.—W. Nicati (*Bulletin de l'Académie de médecine,* January 8, 1924) states that sterilization of conjunctival trachoma is feasible by injections of copper sulphate, which should rank as a specific in this condition to the same extent as mercury or arsenic in syphilis. Solutions of 0.1 to 1 per cent. strength are used—the former put up in ampoules of two mils and the latter in ampoules of one mil, with stovaine added for local anesthetic purposes. The injections are made into the conjunctival cul de sac immediately behind the tarsus, and are repeated until recovery is obtained, every eight, ten or fifteen days. Each successive injection is given shortly after the disappearance of the intense edema produced by the preceding injection. The maximum number of injections in each eye was six. Recovery is marked by a *cicatrix pallida* or pale, smooth, flat scar, without ulceration nor contraction. The injection treatment in no wise excludes the customary treatment by applications and instillations.

Complications Following 1322 Consecutive Cases of Cataract Extraction.—M. M. Cruikshank (*Indian Medical Gazette,* October, 1923), a member of the staff of Dr. Holland at Shikarpur, says that though a strong advocate of the intracapsular method, Holland is convinced that it is not necessarily the operation of choice in every case. To the three classes, juvenile, congenital and secondary cataracts, which Smith considers as unsuitable for the intracapsular operation, Holland adds five more, as follows:

1. The socalled oxeye type—the very prominent eye found in full blooded plethoric individuals, in whom vitreous prolapse is apt to occur. It is difficult to ascribe a reason for the prolapse in these cases. Routine use of the tonometer, however, might throw some light on this point.
2. Those cases of double cataract in black haired, healthy men of from thirty-five to fifty years of age, in whom the zonular fibres are still very resistant and require a pressure for their rupture which leads to vitreous loss.
3. Those cases of cataract in glaucoma and of glaucomatous cataract, in which a preliminary iridectomy is advised; the lens being extracted with capsulotomy three weeks to twelve months later, to avoid if possible the danger

of choroidal hemorrhage. In these cases Holland stresses the point that the incision must be made slowly, the aqueous being allowed to escape slowly and to balloon out the conjunctiva.

4. Cases of traumatic cataract. In these cases prolapse of vitreous is very likely to occur, probably owing to the fact that the trauma has already ruptured the hyaloid membrane and the pressure exerted in extraction in the capsule is therefore more liable to cause vitreous loss.

5. Those cases in which ordinary, legitimate pressure fails to dislocate the lens. It is very difficult to persuade oneself that the lens which is just refusing to present belongs to this class, and the inexperienced operator is tempted to try that little more pressure which ends in escape of vitreous before the lens presents.

GYNECOLOGY AND OBSTETRICS.

Febrile Abortion.—G. Winter (*Zentralblatt für Gynäkologie*, September 22, 1923) sums up the twelve year old discussion on the treatment of febrile abortion as follows: 1. Whoever cannot or will not make bacteriological examinations of the secretions should not attempt evacution of the uterus in the febrile stage, but only after about four to five days following the defervescence; the defervescence should not be waited for longer than five days. 2. The spontaneous expulsion should be aided in every case by quinine. 3. Hemorrhages are no indication for a hasty evacution. 5. Complicated abortions should not be subjected to evacution. 6. The dull curette seems to possess advantages over the manual evacution.

Sex Papillæ in the Female.—B. Lipschütz (*Wiener klinische Wochenschrift*, September 27, 1923) describes a symmetrical zone of papillæ situated on the inner surfaces of the labia minora, which consist of embryonal connective tissue with thickened or narrowed epithelial coverings and contain abundant terminal corpuscles resembling the fungiform papillæ of the tongue. Their development during the period of puberty and their retrogression during the period of senility seem to point to the fact that these papillæ have an important function in libido, which is not due to the sensory apparatus of the clitoris alone.

Experiments with the Tubal Inflator.—Hugo Sellheim (*Zentralblatt für Gynäkologie*, September 15, 1923) reports some additional efforts at inflating the fallopian tubes with his apparatus for the purpose of testing the patency of the tubes. The air is forced through the tubes under normal conditions at a pressure of fifty to one hundred millimetres, and at the most at a pressure of two hundred to two hundred and fifty millimetres; at a pressure of three hundred millimetres the tube is likely to rupture. This procedure is applicable not only for diagnostic purposes but also for therapeutic purposes, inasmuch as the pressure is able to set aside slight obstructions. However, in the presence of infection in the uterine cavity, this procedure may lead to difficulties.

Use, Effect and Dangers of Hypophysis Medication in Obstetrics.—J. Mennet (*Schweizerische medizinische Wochenschrift*, June 7, 1923) states that hypophysis medication, both when used in the usual manner and intravenously, gives excellent results in obstetrics. Nevertheless, it should be borne in mind that this treatment is subject to a great number of dangers, which should be well understood in order to avoid severe mishaps. The injection of pituitrin and pituglandol, without indication, cannot be too severely condemned, as it injures the reputation of actually good preparations. The injection of extract of hypophysis by a midwife without distinct supervision of a physician must be opposed most energetically.

Middle Course in the Treatment of Eclampsia.—Paul Zweifel (*Schweizerische medizinische Wochenschrift*, September 29, 1923) shows that the middle course of treatment in eclampsia, as conceived by Engelmann, has caused considerable confusion. Some feel justified in doing an occasional Cæsarean section, while others believe in inducing a premature delivery in pregnancy in the absence of labor pains. The author found that the blood in eclampsia shows an abnormally excessive specific gravity and that venesection is not followed by any mortality. The withdrawal of blood in amounts of 1400 to 1800 c.c. was borne without any harmful results. Narcotics may be given but no morphine should be given if the child is living. As soon as the spontaneous delivery is in progress delivery is begun, but Cæsarean section is contraindicated.

Applicability of the Meinicke Flocculation Reaction with Cholesterinized and Cholesterin Free Extract in Obstetrics.—H. Thaler and E. Klaften (*Zentralblatt für Gynäkologie*, October 6, 1923) maintain that the most recent clouding reaction of Meinicke with cholesterin free extracts may well be recommended as an exceedingly simple complementary reaction to the Wassermann reaction as a control of syphilis. The cholesterin free extract of very weak dilution (eight fold) was found to be particularly useful in the study of obstetrical material. The simultaneous application of the Wassermann reaction and the Meinicke clouding reaction afford a more reliable conclusion in pregnancy, in labor and in the puerperium, both in the evaluation of the serological findings in syphilitic women and in that of the nonspecific cases. At the present time the following recommendations are made in regard to the technic: Active serum, a two per cent. sodium chloride solution for the dilution of the extract and room temperature; it is also necessary previously to heat the utensils and reagents, as well as to make accurate readings, which are to be considered as clouding after one and after four hours and as flocculation after twenty-four hours.

Acetonuria in Pregnancy. — Pritzi and Lichtmann (*Wiener klinische Wochenschrift*, August 23, 1923) observed the acetone test to be positive in forty-four cases of pregnancy; in seven control cases it was positive only once. The authors come to the conclusion that the tendency to acetonuria, provided the pregnant woman is carefully watched, may be successfully utilized in the diagnosis of pregnancy. A positive reaction certainly points to pregnancy; a negative reaction does not definitely exclude pregnancy, but makes it unlikely. However, the conclusion should not be drawn that this test is applicable in the diagnosis of indefinite gynecological cases, especially in febrile conditions and where there is a reduced state of nutrition. Additional investigation should be made to determine whether or not this test is applicable in the differential diagnosis between adnexal tumors and ectopic pregnancy.

Prognosis of Cardiac Disease in Pregnancy.—Walter Frey (*Zentralblatt für Gynäkologie*, October 6, 1923) believes that pregnancy does not as a rule aggravate cardiac disease during pregnancy any more than any other intercurrent diseases. The prognosis of heart disease is therefore not particularly bad. Mitral stenosis does not take up any unusual position in this respect, and it is compensated for a long time just as well as mitral insufficiency. Cardiac sufficiency is dependent in the first place, not upon the location of the valvular lesion, but upon the condition of the musculature. Just like other cardiacs, pregnant women afflicted with cardiac disease die only exceptionally from mechanical factors, but always from a freshly occurring inflammatory process on the valves or myocardium.

The following are the guiding principles in the therapy of these conditions: In cases of acute endocarditis it is advisable to interrupt the pregnancy in every stage. In cases with decompensation, without demonstrable inflammatory changes in the heart, a conservative attitude is advisable, even in mitral stenosis. Women with valvular lesions without decompensation and without inflammatory changes in the myocardium or endocardium, provide no indication for the interruption of pregnancy.

Five Years' Experience with the Kielland Forceps.—S. Spitzer (*Zentralblatt für Gynäkologie*, June 2, 1923) applied the Kielland forceps in all those cases where the axis traction for the classical forceps had to be applied heretofore when the head was in the transverse position. One hundred and thirty-two cases are reported and the results were very satisfactory. In a high forceps application this new model reduces the transverse diameter by compressing the head from two sides and thereby facilitates the passage of the head when it is in the transverse position. Rupture of the uterus from turning the anterior spoon in the uterus need not be feared, provided the spoon is pushed up sufficiently high. Ruptures of the clitoris and the severe tears of the perineum as a result of the slipping of the forceps do not occur with this model. The springiness of the handles is a decided advantage and consequently the use of excessive force is eliminated. Injuries of the eyes from biparietal application is almost impossible. The completion of labor, which is almost impossible or can be accomplished only with great difficulty and with great danger for both the mother and child with the ordinary or axis traction forceps, is made possible with the Kielland

forceps. In spite of the wide field of its application, it is much less dangerous than both of the other types of forceps. However, it should be used only by those who are practically able to take care of difficult cases. In the cases of the head being rotated in the pelvic outlet, the classical forceps is more suitable.

Experiences with the Kielland Forceps.—Hans Hirschberg (*Zentralblatt für Gynäkologie,* June 2, 1923) finds that the use of the Kielland forceps frequently facilitates labor and is more sparing for the mother and child because the great dead space between the approximating blades of the forceps, which is not present in the classical forceps. Specially good results are obtained in the application of high forceps, if this is indicated. The delicacy of the handles is also a great advantage. The author warns against forceful rotation and advises the following of the rotation impulse of the head and to proceed with a gentle and searching hand as a mistake may be made in regard to the position of the head.

Sensation of Pressure on the Rectum, as Sign of Completed Expulsion of the Placenta from the Body of the Uterus.—F. v. Mikulicz-Radecki (*Zentralblatt für Gynäkologie,* July 7, 1923) asserts that in addition to the most important signs of the expulsion of the placenta from the uterus, namely, the rise of the uterus beyond the level of the umbilicus, the reduction in size and the angulation of the uterus and the advance of the umbilical cord, must be mentioned the sensation of pressure on the rectum, which the woman feels when the separated placenta lies in the canal of the cervix or in the vagina. Immediately after the appearance of this sign, slight pressure is sufficient to express the placenta. With the aid of this sign the frequent uncovering of the woman and the control of the abdomen are rendered unnecessary. However, the woman in labor must be instructed as to the occurrence of this sign.

Primary Lesions on the Internal Female Genitals.—Karl Herold (*Zentralblatt für Gynäkologie,* August 18, 1923) calls attention to the importance of recognizing the nature of the ulcerations on the vaginal portion of the cervix of the uterus. Gynecologists do not think of the possibility of a syphilitic primary lesion often enough. The epithelial defects in the vaginal portion of the cervix are a site of predilection for the spirochetes. The symptoms complained of were pains in the hips, groins and in the abdomen. On histological examination the danger of mistaking the lesion for carcinoma and sarcoma must be thought of.

Behavior of Thrombocytes in Climacteric Hemorrhages and Their Influence as a Result of Calcium Medication.—R. Hornung (*Zentralblatt für Gynäkologie,* August 11, 1923) endeavored to determine whether the changes in the mechanism of coagulation resulting from the dysfunctioning of the ovaries is due to climacteric changes. He injected ten c.c of a ten per cent. solution of calcium chloride intravenously and frequently found, no later than twenty-four hours at the most, a pronounced reduction in the number of blood platelets in every one of his cases. The hemorrhages were entirely checked after the first or second injection of calcium in eighty per cent of the cases. The hemorrhages were not controlled in eight per cent. of the cases.

Value and Limitations of Rectal Examination During Labor.—v. Mikulicz-Radecki (*Zentralblatt für Gynäkologie,* August 4, 1923) asserts that the vaginal examination during labor is and remains a more delicate, but also a more dangerous, method than rectal examination; the latter can never completely replace the vaginal examination. It requires a certain amount of experience. The student should be taught first the vaginal method because it is the most informatory in critical cases. It is possible to recognize the cervix of the uterus through the rectum provided it is still present, but a thin rim of the cervix is not palpable. The recognition of the bladder through the rectum is often difficult, as the feeling of the hairs is possible through the vagina after the bag has ruptured. It is almost always possible to determine the presenting part, even of the sacrum, except when it is still high over the pelvis. The diagnosis of placenta previa is very difficult. The pelvis can be easily palpated. Normal labors can therefore be easily conducted by rectal examination and in difficult cases the attempt may be made to do so. The mucous membrane of the rectum does not suffer from such examination.

Placental Transmission.—L. Jean Bogert and E. D. Plass (*Journal of Biological Chemistry,* June, 1923) made calcium determinations on the maternal and fetal serum by the direct method of Kramer and Tisdall. The calcium content of the fetal serum was found to be substantially higher than that of the maternal serum in every case investigated, the average difference being 1.8 mg. per cent. Magnesium was usually present in the same concentration in fetal and maternal serum, although in a few instances the fetal values were higher. No constant relationship between the calcium or magnesium content of the serum and the age or parity of the mother was observable. The serum calcium of the mother at the end of labor was usually below the physiological range for normal nonpregnant women, while the average maternal serum calcium is distinctly lower than the average value for normal women. The serum calcium of the child at birth is usually higher than the normal physiological range for adults.

Basal Metabolism and the Menstrual Cycle.—Glen Wakeham (*Journal of Biological Chemistry,* June, 1923) gives the results of ninety-eight basal metabolism determinations on twenty-four subjects under unusually favorable conditions for observation. The following facts were brought out by this study: There is a distinct fall in basal metabolism about the beginning of the menstrual period, a rise within the week or ten days prior to menstruation, and a gradual return to normality within seven or ten days following it. The following tentative suggestions are offered: That basal metabolism is considerably higher on the average in those engaged in strenuous labor than in those of sedentary occupations; that fluctuations in basal metabolism are less in those living under uniform conditions than in those whose mode of life is more varied; that the basal metabolism variation due to the menstrual cycle, while in every case less than the average daily fluctuations, is greater in active individuals than in sedentary individuals; that causes which produce too frequent menstruation are likely to be accompanied by high basal metabolism, and those which delay or suppress menstruation by low basal metabolism.

How Does Increased Intraabdominal Pressure Affect the Kidneys and to What Extent May This Effect Be Utilized Therapeutically? W. Gessner (*Zentralblatt für Gynäkologie,* September 22, 1923) asserts that it has been shown experimentally that circulatory disturbances may be produced in the kidneys by raising the intraabdominal pressure, the clinical picture of which absolutely resembles that of the kidney of pregnancy. This requires, not the socalled toxins of pregnancy, but only a fatty, pasty habitus, which constitutes the prerequisite for the increase in the abdominal pressure and for the ischemia of the abdominal viscera and particularly that of the kidneys. In case of postpartum hemorrhage, the author recommends the application of an enlarged Recklinghausen cuff, which is made to surround the abdomen and inflated as a pneumatic aortic compressor, and also the application of a marked pneumoperitoneum, which act as a hemostatic through the increased intraabdominal pressure. If necessary, this pressure may still further be increased by pressing the inflated rubber tube of the Recklinghausen cuff firmly against the vertebral column with the hand. In this manner the author was always enabled to control hemorrhage from the pelvic organs.

Pathological Anatomy of Corpus Luteum.—Emil Novak and R. W. TeLinde (*Bulletin of the Johns Hopkins Hospital,* September, 1923) in summarizing their study of the corpus luteum, state that it shows individual variations within physiological limits, the most important of these being cystic distension of the corpus and an excessive degree of hemorrhage. Corpus luteum abscesses are very frequent. Corpus luteum cysts may be subdivided into the recent type and an old type, and the same classification holds good for corpus luteum hematomas. These are commonly due to excessive hemorrhage into the lumen during the stage of vascularization. The authors state that there is no reason why ovarian tumors of supposedly lutein origin which have been described should not occur, and growths, chiefly carcinomas, have been observed by them in which such an origin was suggested morphologically. The condition spoken of as multiple lutein cysts of the ovary, found with some cases of hydatidiform mole and chorioepithelioma and sometimes erroneously designated as multiple corpus luteum cysts, is due to a widespread luteinlike transformation of the theca cells in the atretic follicles.

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Medicolegal Notes.

TESTIMONY TO FACTS NOT OBJECTIONABLE AS OPINION OF PHYSICIAN IN ANOTHER SCHOOL OF PRACTICE

In an action against a sanipractor, or drugless doctor, for negligent diagnosis and improper treatment of plaintiff's minor son, the Washington Supreme Court holds, Wilcox v. Carroll, 219 Pac. 34, that the testimony of allopaths, employed by the plaintiff after defendant had abandoned the case, and who performed an operation for appendicitis, as to their diagnosis of the disease, their operation, and various other matters in connection with their treatment of the case, was admissible as testimony of facts found by the operation as well as by their preliminary examination, and was not objectionable as expert testimony by physicians belonging to another school of practice.

DIFFERENCE OF OPINION AS TO ADMINISTRATION OF ANESTHETICS.

In an action against two physicians and surgeons for malpractice in the administration of an anesthetic, in which negligence was alleged in administering ether or chloroform instead of a local anesthetic, and without first giving the patient a heart stimulant, the testimony showed a difference of medical opinion, expressed by physicians and surgeons of unquestioned standing and reputation in the neighborhood, the majority testifying that everything done by the defendants had been in accord with the best modern surgical practice. It was held, Remley v. Plummer, 79 Pa. Superior Ct., 117, that the defendants were not negligent for having adopted the view held by the majority of their brethren who testified. "In cases where authorities differ or 'doctors disagree' the competent physician is only bound to exercise his best judgment in determining which course is on the whole best."

NEW YORK DOCTRINE AS TO LIABILITY OF CHARITABLE HOSPITALS.

After much discussion, the New York Appellate Division says, in Phillips v. Buffalo General Hospital, 202 N. Y. Supp., 572, that the law has been settled in the State of New York that a charitable corporation is not totally exempt from liability for the negligent acts of its employees committed within the line of their employment. It is equally well settled that a hospital maintained as a charitable institution is exempt from liability for the negligent acts of physicians and nurses in the treatment of patients. Such exemption from liability has finally been placed squarely upon the ground that the patient, upon becoming an inmate of such charitable institution, waives all claims of liability growing out of the negligent acts of physicians and nurses which occur during treatment. This is true, even though the patient injured by the negligent act of a physician or nurse is a paying patient. Such a payment is regarded as a contribution to the income of the hospital, to be devoted, like its other funds, to the maintenance of the charity.

In the present case the plaintiff was a paying patient, the defendant a charitable corporation, maintaining a hospital. The plaintiff, while being treated, was burned by a hot water bottle negligently placed in the bed with her, while she was unconscious, by an orderly. It was conceded that the defendant would not be liable in an action for negligence if the hot water bottle had been placed in the bed by the nurse in charge of the case. A recovery was permitted in the court below, however, upon the theory that the orderly was a servant of the defendant, occupying the same relation to it as the superintendent or assistant superintendent, and that for his negligent act the defendant was responsible, under the doctrine of respondeat superior.

Reversing this judgment, and dismissing the complaint, the Appellate Division says: "It is true that the defendant might be held liable for the negligent act of one of its servants, committed within the scope of his employment, which resulted in an injury to a third person not a beneficiary of its charity. To hold, however, that the plaintiff, upon becoming a patient in the defendant's hospital, impliedly waived all right of action for damages growing out of injuries which might be caused by negligent acts of a nurse, but did not waive such rights of action if the injury should be caused by an orderly, seems illogical and unjustified. There is no reasonable basis for such distinction."

PHYSICIAN'S ACCOUNT BOOKS AS EVIDENCE

Where a physician presented a claim against his father's estate for professional services rendered during a period of five years, the Pennsylvania Superior Court, Croushore's Estate, 79 Pa. Superior Ct., 286, held that, although the question whether a physician's account book can be received in evidence as a book of original entries seems to be still in doubt in the State of Pennsylvania, where the doctor, who kept the books, testified, and use was freely made of the books without objection, the books were competent to serve as a memorandum, used by the witness to refresh his memory and in corroboration of his testimony.

The deceased in his will directed that his son should receive credit for all professional services rendered to him, and it was held that the son should not, in the circumstances, be hampered in proof of his claim by his relationship.

INSUFFICIENT EVIDENCE TO PROVE PRESENCE OF PATIENT WITH SMALLPOX IN HOSPITAL.

In an action against a hospital for negligence of its employees in permitting a patient to contract smallpox from another patient, the hospital claimed that there was no case of smallpox in the hospital while the patient was there. Evidence of the presence of a man in the hospital whose face looked is if he might have smallpox was held too conjectural, in view of the fact that expert physicians could not make a reliable diagnosis of the disease from such an appearance alone, without continued observation, because of its baffling resemblance to several other common diseases of the skin. Such an inference would not support the conclusion that any of the employees of the hospital, including the nurses, knew of the existence of any case of smallpox in the hospital. Gadsden General Hospital v. Bishop, Alabama Supreme Court, 96 So. 145.

HOSPITAL INTERN'S RIGHT TO COMPENSATION UNDER WORKMEN'S COMPENSATION ACT.

The New York Court of Appeals, Bernstein v. Beth Israel Hospital, 236 N. Y., 268, 140 N. E., 694, affirming 205 App. Div., 419, 199 N. Y. Supp. 740 (of which an abstract appeared in the Medical Journal and Record of January 16, 1924, p. 128) holds that the fact that interns in this hospital (unlike those in many others) receive no money for their services, but only lodging, board and uniforms, does not defeat their right to an award of compensation under the New York statute, such recompense being wages, as defined by section 3, subd. 9.

The hospital does not carry on its business for pecuniary gain. It elected, however, to insure. The insurance carrier, having accepted its premium, is by section 55 of the compensation statute, added in 1922, bound to the same extent as if gain rather than benevolence had inspired the activities of the hospital.

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The Treatment of Deafness*

Brief Review of Current Theories and Methods. Suggested Modifications More Logically Based on the Problems Involved.

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Probably at no previous time have deaf people in larger numbers been in the hands of untrained and irregular practitioners than today. Are we as practical otologists in any way responsible for this fact?

It has seemed to me that we are less logical in our treatment of deafness than in our treatment of any other otological problem; that we have accorded to certain measures a position of importance entirely unjustified by their results; in other words, that we have got into a rut, which has to some extent discouraged constructive effort and thereby limited our advance.

That, as I see it, is one side of the picture. On the other hand, there are encouraging signs in a tendency toward a broader concept of deafness and the treatment problem. The question of extraaural foci of infection as an underlying factor in deafness is studied more widely and intensively than ever before. There is a growing willingness among progressive students of deafness to condemn openly whatever agency in treatment, however timehonored, has not yielded results of definite value. The possibilities of advance along lines or pathways not heretofore traveled are in men's minds. New agencies as applied to the perceptive mechanism are under investigation by groups of young and competent observers. In short, there is a salutary awakening to the need of a restudy of the whole difficult problem of treatment from new, or at least from different, angles or viewpoints.

This paper is divided into three parts, which represent efforts in three directions: 1. To review current theories of local treatment; 2, to suggest a modified plan of treatment more logically based on the mechanical problems involved; and 3, to consider briefly the problem of treatment from other viewpoints.

PART I: CURRENT THEORIES OF LOCAL TREATMENT

Excluding all cases of chronic deafness due primarily to auditory nerve or labyrinthine defect or disorder, the classical treatment is based for the most part on one or other of two timehonored theories of the mechanics of sound obstruction:

1. *That of the occluded tube.*—It is assumed that this condition, causing retraction of the drum membrane and venous congestion of the tympanic mucosa, is in large measure responsible for the deafness present. Undoubtedly tubal disease has an important etiological relation to the incipient stage of most tympanic lesions. But that in advanced or long standing deafness tubal obstruction is more than a minor factor in the actual obstruction of sound waves, is disproved by the fact that its restoration to normal patency or condition *never brings even an approximate return of normal hearing.*

2. *That the drum membrane has become thickened, rigid, or in some way less mobile than in the normal ear,* and therefore does not respond as normally to sound waves. It is assumed that any agency, e. g., inflation or pneumatic massage, which causes forcible passive movements of the drum membrane, will improve sound transmission. This, I believe, is a particularly unfortunate popular misapprehension which in the past has to some extent beclouded the whole question of treatment. I am convinced that exactly the reverse is true in the vast majority of cases.

There is, of course, a third and major factor in the pathology of obstructive deafness, i. e., ankylosis or rigidity of the ossicular joints, and particularly, as in otosclerosis, fixation of the stapes within the oval window. Such changes, however, are so clearly beyond correction by any of the usual treatment measures as to have little bearing on their value.

The local measures in common use are so few in number as to be easily listed. Measures to relieve nasopharyngeal congestion; the use of bougies for tubal obstruction; medicated bougies for tubal congestion; Politzerization or catheter inflation to restore air pressure equilibrium; pneumatic massage, supposed to "exercise" both drum membrane and ossicles, practically complete the list. A moment's reflection will convince one that, with the possible exception of inflation, not one of these measures has any logical basis in the treatment of deafness except as based on one or other of the two hypotheses stated above.

If the commoner types of deafness were associated

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with increased rigidity or stiffening of the drum membrane, the treatment, so far as it concerned this pathological feature, would be comparatively simple; for it would not be difficult by inflation or some form of pneumatic massage to lessen this rigidity. But experience has abundantly shown that treatment along these lines does not relieve deafness; and it would seem that this failure should have *per se* considerable weight as evidence that this theory of the mechanics of deafness is unsound.

The relaxed membrane.—This argument is based on the proposition that relaxation of the drumhead is one of the commonest of pathological changes in obstructive deafness. By relaxed membrane I do not necessarily mean the exaggerated forms in which the membrane in whole or part is seen to balloon out into the canal during Valsalva inflation, nor do I refer particularly to the cases of extreme atrophy in which the entire membrane is seen so plastered against the tympanic wall as to be hardly recognizable. I include under this term the far more numerous but less conspicuous forms in which the entire membrane or parts of it suffer a loss of normal tonicity not easily measured by inspection, but which counts nevertheless as a potent factor in the retrograde processes leading to deafness.

Every experienced aurist will admit that, barring the purest types of otosclerosis, retraction of the membrane is present in some degree in the vast majority of cases of tympanic deafness; also that the retraction in these cases is not a temporary condition, but usually of long standing. It is impossible to believe that a comparatively rigid and inelastic membrane can be stretched into an abnormal position and there retained over a period of months or years without undergoing some degree of structural change, i. e., relaxation. Furthermore, if such relaxation did not exist, the drum membrane, when released by inflation or cocainization of the tube, would spring back into a perfectly normal position. As a matter of fact, such complete correction of position does not as a rule take place. If, from a consideration of these more or less obvious facts, we conceive of prolonged retraction and relaxation as being in a sense equivalent terms, we shall have little difficulty in accepting the theory of a relaxed drumhead as a common factor in the mechanics of sound obstruction.

Let us accept for the moment as a working hypothesis the theory that relaxation of the drumhead is almost invariably present in obstructive deafness, and consider just how this influences the process of sound transmission.

Drumhead relaxation as part of a vicious circle leading to deafness.—As soon as any portion of the membrana tensa loses any part of its normal tonicity, the effect of sound waves upon the ossicular chain must be reduced; for it is obvious that the relaxed portion of the membrane will be able to move within a certain range, increasing as relaxation progresses, without communicating its motion to the hammer handle and ossicles, and that to this extent sound transmission must be impaired. In other words, it should require no argument to prove that the force of a sound wave must first "take up the slack" of a relaxed drum membrane before it becomes operative upon the ossicular chain. So far we are dealing with facts which are obvious and incontrovertible. But there is another exceedingly important direction in which relaxation may operate to reduce hearing power, i. e., by disturbing the mechanism controlling the passage of sound waves through the labyrinthine fluids. With marked relaxation of the posterior segment, for example, it is conceivable that, under the impact of sound waves, exaggerated inward movements of this portion may cause such abnormal synchronous pressure upon the membrane of the round window as to reduce its compensatory function, and thereby partially block the movements of the cochlear fluids. This is an important factor in the mechanics of sound obstruction which has apparently escaped the attention of students of deafness.

As soon as relaxation of the membrane has reached the point at which ossicular response to sound waves is definitely reduced, it is conceivable that progressive loss of ossicular mobility—i. e., rigidity of the ossicular joints from relative disuse—begins. From this point the pathological process in its effect upon hearing power is a dual one, progressive loss of tonicity in the membrana tensa and progressive increase of ossicular rigidity marking the advance of the disease. Nor is the direct chain of evils yet ended; for there is reason to believe that sooner or later another inevitable factor is added in the condition of the acoustic nerve itself which, no longer receiving its normal stimuli in normal force, undergoes a sort of functional retrogression or torpor. Such a hypothesis, at least, seems necessary to explain the functional status in the later stages even of cases apparently beginning as purely tympanic lesions, when a degree and type of deafness are reached which can hardly be explained except by the assumption of auditory nerve involvement.

It is time for us to think logically of this important factor, and say that in all types of auditory impairment, even in those usually regarded as characteristic of purely tympanic origin, a degree of deafness which our common sense and our acquired knowledge tell us could not be produced by any induced lesion of drum membrane or ossicular chain, must mean also involvement of the acoustic nerve.

To epitomize: In the progress of a chronic obstructive lesion, three consecutive factors in the production of deafness regularity arise: 1, impaired transmission through relaxation of membrana tensa; 2, reduced ossicular mobility through relative ossicular disuse; and 3, slowly progressive acoustic nerve torpor through gradual cutting off of normal sonorous stimuli.

It is not, of course, intended that the above shall be regarded as my conception of the complete picture of the tympanic pathology of obstructive deafness. The three stages there described represent, however, not only usual phases, but most important factors in the mechanical obstruction of sound waves. They supply our best clues to a rational scheme of local treatment.

In the light of the foregoing discussion, let us consider for a moment the effect on hearing of any scheme of local treatment in which routine inflation plays an important rôle. In attempting such an appraisal, one must differentiate between the immediate and the ultimate results.

Initial effects of inflation.—With a patient suffer-

ing from chronic obstructive deafness, the first inflations usually bring a sense of comfort and relief and may result in an appreciable gain in hearing. This is a quite logical result. The retracted position of the membrana tensa has been corrected and air pressure equilibrium restored. The drum membrane, therefore, responds more effectively to sound waves and transmits these impressions, or movements, more effectively to the ossicular chain. The hearing is, therefore, temporarily improved. According to my experience, an apparently progressive gain in hearing is frequently obtained up to the fourth or, more rarely, the fifth or sixth inflation, after which we shall do well if we are able by this method to maintain the maximum limit so far obtained.

Of the ultimate results of inflation one cannot speak so favorably. The patient who is subjected to periods of treatment alternating with periods of rest usually shows quite marked variations in hearing power at different times. After several months without treatment, he may have relapsed to the functional status of the first treatment period, from which, however, a short course of treatment brings substantial recovery.

Finally there comes a time, perhaps in one, two, or more years, when by careful tests the aurist's best efforts fail to bring the hearing up to the maximum limit of the first treatment period. As soon as this point is reached, i. e., when the original peak of functional gain can no longer be reached, the retrograde sequence of events is definitely established. From this point, the functional curve is downward.

Logic of functional changes as based on changes in tension.—Whoever under good illumination has studied the effects of Valsalva inflation or of socalled massage as seen through a Siegel otoscope, cannot fail to have noted the great disparity in cases of deafness between the movements of the membrana tensa and those of the hammer handle. Even with moderate relaxation, the two segments of the membrane are seen to execute quite extensive movements into the canal while the movements of the hammer handle may be so slight as to be difficult to detect. Reasoning from this observation, it is clear that routine catheter inflations, acting in like manner, must sooner or later cause further anomalies of tension. If, therefore, we remember that in whatever degree the normal tonicity of the drumhead is lost in like proportion will the influence of sound waves upon the ossicular chain be reduced, the effects of ill advised, or too forcible, or too frequently repeated inflations will not be difficult to comprehend.

If this sequence of events has been fairly portrayed—if I have not been illogical in my analysis of results—surely there is reason for some modification of current theories or methods.

PART II: LOCAL TREATMENT OF OBSTRUCTIVE DEAFNESS

The following discussion of treatment is based on twenty years' experience, made up in good part of blind following of old paths leading nowhere, and of subsequent eliminations and modifications.

We shall probably all agree that the first step toward a rational scheme of local treatment—of any disease—would be a careful elimination of all useless procedure.

In the following outline of treatment, I shall try, wherever a departure from the usual routine is suggested, to give the basis, or reasons, therefor.

Inflation.—The first treatments should follow the usual routine, i. e., catheter inflation at short intervals, preferably on every second or third day. Rapid hearing tests should be made before and after each inflation and the results accurately noted on the history card. These frequent tests are important and serve two purposes: 1, to determine temporary variations of function; and 2, what is far more important, to gauge any cumulative or progressive gain in hearing which may result. According to my experience, the maximum hearing gain is usually obtained by the fourth, fifth or sixth inflation. As soon as it is clearly demonstrated that no progressive improvement is being made—i. e., that the maximum result by this method has been reached—I believe that inflation as a routine measure should be discontinued. This belief is based on my experience that from this point more can be accomplished in the interest of permanent betterment of hearing by judicious treatment of the pharyngeal, or fibrocartilaginous, portions of the eustachian tubes than by frequent inflations, and that the drum membranes are thereby relieved of a strain which may cause further anomalies of tension and ultimately work quite serious injury to hearing.

Note.—I believe that the real explanation of the persistent routine use of catheter inflation is the universal and very natural desire for immediate results. As a matter of fact, however, the short lived functional gain following inflation is frequently the most direct available evidence of a nonfunctionating tube which, by reason of its resistance to the return air current, maintains for a time a distended tympanum, just as later it leads to negative air pressure and retraction. The logical indication, therefore, is not for inflation, but for careful local treatment of the pharyngeal end of the eustachian canal.

Eustachian canals.—I want to emphasize two points which seem to me established by experience: 1, that catheter inflation *per se* exerts no influence whatever of therapeutic value upon a chronically congested tube. If any influence be exerted, it is purely temporary; 2, the frequent passage of eustachian sounds or bougies does not materially help to restore a diseased tube to a normal condition. On the contrary, with allowance for exceptional cases of actual localized adhesions or constrictions, the frequent passage of even a small bougie through and beyond the isthmus may increase a tubal lesion and do positive harm.

If the foregoing conclusions are well founded, it follows logically that we shall obtain surer and quicker results, and in the final analysis accomplish more of permanent value to the patient, if we limit our treatment of the tube, a, to the application of appropriate drugs; and b, this failing, to direct surgical measures for the reduction of chronic congestion, edema or hypertrophy of the pharyngeal end of the canal.

The choice of drugs is so largely a matter of personal experience as to be inappropriate for discussion before a body of otologists.

As to method of application: it is hardly open to question that tubal disease begins usually or always in the pharyngeal end of the canal. Just as cocaine

or adrenalin, applied to this portion, usually clears the whole canal, so astringents or other drugs, confined to this region, usually exert their influence throughout the entire length of the tube. In my experience, a larger percentage of tangible results is obtained from drugs confined to this restricted field than from the same drugs applied by sounds or applicators throughout the entire canal.

Aside from their convenience in cleansing the nasal passages, nasopharyngeal sprays have little or no value in treatment. On the other hand, periodical irrigation of the nasopharynx with a warm solution of normal salt or of some mild antiseptic solution are of positive value in relieving nasopharyngeal and tubal congestion. Occasional postnasal irrigation with a warm solution of argyrol of two per cent. strength is of unquestionable value in a very considerable proportion of cases.

The treatment mentioned, though exceedingly simple, is rational, theoretically constructive, and should help to stabilize whatever functional gain results from the short course of inflation.

Naturally there are cases in which the results of the treatment above outlined are disappointing. While the nasopharyngeal condition may show obvious improvement, there may be no evidence of any improvement in tubal function. Such cases call for careful reexamination.

Valsalva catheter inflation test.—This test is simply a comparison of the results of Valsalva inflation (or Politzerization) with those of catheter inflation. If, for example, by the Valsalva method the patient finds unusual difficulty, i. e., requires unusual force, to inflate the ear while the otoscopic sounds during catheter inflation show that the tympanum is easily and fully inflated under moderate pressure, one may safely infer that the obstacle to the air current is at the mouth rather than within the depths of the canal.

Direct inspection with an electric pharyngoscope will throw considerable light on certain cases of obstinate tubal insufficiency. One may find, for example, a degree of congestion, edema or hypertrophy of the mouth of the tube easily accounting for practical failure of function in a tube quite open to catheter inflation. When this condition fails to respond to simpler measures, incision through the congested or edematous portion may through withdrawal of blood or subsequent tissue contraction bring about restoration or at least improvement of tubal function.

Surgical treatment.—The accompanying figures represent instruments designed by the writer for use in this field. Fig. 1 shows the probe, and Figs. 2 and 3 two knives for incision of the anterior and posterior lips respectively. When the nasal passage and pharyngeal end of the canal have been cocainized, the knife, whichever is to be used, is passed catheter fashion through the nose and introduced by slight pressure into the tube. If sharp, a clean incision may be made as the knife is withdrawn. A little practice will enable one to pass these knives without injury to turbinates or other intervening structures. Should it seem wise to incise both pillars, some days should intervene to insure against possible adhesions. While the blades of these knives may seem at first glance unnecessarily wide, a moment's reflection will show that this is a provision of safety, since the incisions are intended to be restricted to the mouth of the tube, and not to extend deeply into the lumen of the canal.

In the limited number of cases in which I have used this procedure, the results have seemed favorable. There is sometimes a quite free bleeding for a minute or two, which ceases automatically. I have seen no troublesome inflammatory reaction. It can

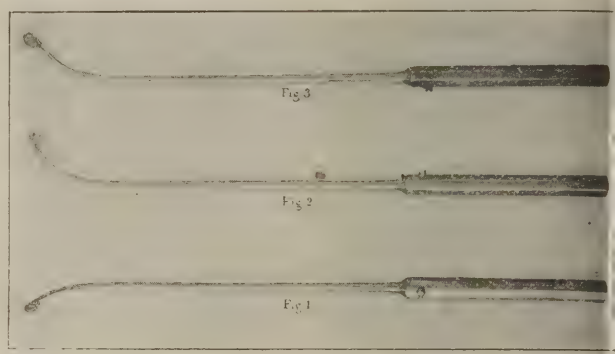

Fig. 1.—Eustachian probe.
Figs. 2 and 3.—Eustachian knives for incising anterior and posterior walls respectively.

be of value only in carefully selected cases. It is mentioned only as supplying a useful link in the chain of treatment measures for certain cases in which an obstructive condition or lesion definitely localized in the pharyngeal mouth of the tube blocks the way to results.

It is clearly illogical to expect any sustained improvement in the position of the drumhead until the tubes are brought into a relatively normal condition; and the treatment above outlined has seemed to me to give in general the most satisfactory results in this direction.

The drum membrane.—I believe that, more than we usually take into account, the drum membrane itself calls for direct attention in the treatment of obstructive deafness. If we inspect the membrana tensa critically, even after we have secured a fairly open and presumably functionating eustachian canal, we are apt to find some degree of retraction. The cause of this may no longer be a condition of negative air pressure within the tympanum, but rather the structural habit or set of the membrane after years of tubal congestion and insufficiency. The membrane, therefore, like any fabric long inured to one position, tends after inflation gradually to lapse into the habitual but abnormal position of retraction.

The paper disc (a digression).—Many of us who have seen some of his patients know that the late Dr. Clarence John Blake made frequent use of paper discs, applied to the drum membrane, in the treatment of certain types of deafness. I have under my care one of his patients, formerly a resident of Boston, who states that the replacement of these discs constituted a regular feature of his treatment. Either he observed favorable results from this procedure, or hypnotized himself into a belief as to its value, or, as seems to me more probable, saw in it a logical step in his effort to rebuild or reestablish the conducting mechanism on more physiologically normal lines.

Writing in 1921, D. Harold Walker described the cases of four patients, all suffering from vertigo of

distressing type and all showing physical signs of relaxed drum membranes. In all of these cases the disturbances of equilibrium were promptly relieved "by the simple application of a rice paper splint."

Apparently Blake's advocacy and Walker's paper fell on otologically deaf ears. Yet there are tympanic conditions which illustrate quite clearly the use of paper discs in the treatment of deafness.

We know, of course, that various measures, e. g., multiple incisions, have at various times been proposed for correcting abnormal relaxations; there is, however, but one rational line of effort at our disposal, i. e., to replace *and retain* the membrane in an approximately normal position, thereby giving nature a chance to restore normal tone. There is no other logical means to this end.

The paper splint is applied as follows: a disc of rice paper is cut to conform to the more relaxed or atrophied portion—i. e., the portion most noticeably defective in structure or tension, and therefore least fitted either to transmit sound waves or to withstand even slight changes in tympanic pressure. After being soaked in alcohol, this is introduced deeply into the canal and placed against the posterosuperior canal wall. It is then slid into position and adjusted with a tightly wound cotton applicator. Such a splint, properly applied, will hold its position for weeks, though tending to move toward the nearest canal wall. Its adherence to the membrana tensa is so close that removal is difficult or impossible without soaking. If, therefore, the disc is applied immediately after inflation, its value in supporting a relaxed membrane in a relatively normal position becomes clear. The hearing may or may not show immediate gain. The purpose, however, is to reestablish more normal position and tension. If we can accomplish this, we can afford to wait upon improvement in hearing, which should logically follow.

Summing up.—If the steps above outlined have been successfully carried out, we should have the following tangible results: 1, A better functionating eustachian canal; 2, a more normally placed drum membrane; and 3, a more normal balance between drum membrane and ossicles. Functionally these changes should be translated into improved hearing —not necessarily of the spectacular type which occasionally follows immediately upon inflation and is as quickly lost. Rather it should be a clearer definition for all sounds which, however moderate in degree, should be better sustained.

The ossicular chain.—We come now to the most difficult problem in local treatment: *how without injury to the drum membrane to exercise or reeducate the ossicular chain to more effective transmission of sound waves.* We cannot expect by any exaggerated or unnatural passive movements of the membrana tensa to improve sound conduction, because the resulting strain upon the membrane will first counterbalance and ultimately far outweigh any advantages from improved ossicular mobility.

Utilization of sound waves.—Many years ago I published a short paper on the utilization of selected sound waves from a specially designed set of large tuning forks for exercising the ossicles in obstructive deafness; and nothing in my subsequent experience has disturbed my belief that such a method provides a logical means to this end. We know that impressions of sound reach the inner ear chiefly through vibrations of the conducting mechanism excited by sound waves from without; that in obstructive deafness loss of tone perception begins at, and extends from, the lower end of the musical scale. Why, then, is it not a logical procedure to make use of selected sound waves of low pitch but relatively great intensity to exercise the ossicles in just those movements (sounds) for which their mobility is known to be impaired? If, for example, it be shown by careful tests with small forks that the hearing is all but lost for a given note, e. g., 128 d. v., why may we not exercise the conducting mechanism for that particular note by means of larger forks of the same and of lower pitch whose greater amplitude of vibration is sufficient to throw the drum membrane into more vigorous vibrations?

My forks were made according to my own specifications. The set consists of twenty-nine forks which without clamps produce every full tone of the musical scale in the four octaves from thirty-two double vibrations to 512 d. v. With clamps the lower forks produce tones one octave lower, or down to 16 d. v.

Method of use.—Let us suppose that the superficial or approximate lower tone limit is shown to be 160 d. v.; then this fork and three or four others immediately below it in the musical scale (144, 128, 120, 107 d. v.) are used as follows: First the highest fork, 160 d. v., is set in maximum vibration and held with the flat surface close to the ear until its tone is no longer heard. This may be repeated once or twice. Then the next lower fork, 144 d. v., is used in the same manner, and so on through the series of successively lower forks until one is reached which is not appreciated as sound. Manipulated in this way, forks two to four notes lower will usually be heard.

Risks inherent in prolonged exposure to sound waves.—That careless or irrational use of sound waves entails some risks goes without saying. We have only to cite the well known experiments of Wittmaack as to the organic changes in the cochlea following prolonged exposure to a single tone, to enforce this observation. The late Dr. Blake, of Boston, recorded the results of experiments in which he assisted Professor Politzer, in which sound waves from electrically activated tuning forks were used. He stated that "these experiments showed apparently an improvement in hearing in cases of rigidity of the articulations of the ossicles." In his experiments, however, the ear was subjected to the continuous influence of a single tone for three to four minutes, and the experiments were discontinued on account of the evidence of auditory fatigue and a peculiar form of continuing or "after" tinnitus. These statements of Blake are of practical significance from two viewpoints: 1, as emphasizing the danger of prolonged exposure to a single sound wave; and 2, as suggesting the possible influence of sound waves in stimulating the acoustic nerve—i. e., since auditory fatigue would seem necessarily to imply a primary period of stimulation.

It will be noted that in the use of tuning forks outlined in these notes, auditory fatigue is eliminated or at least reduced to a minimum by, a, the quick shifting from one tone to another in the descending musical scale; b, by the rapid automatic diminution

of intensity in the vibrating fork; and c, by the fact that the forks used begin with the apparent lower tone limit—i. e., that they represent tones for which the nerve is more or less protected by impaired transmission.

As I wish to discuss briefly the physiological influence of sound waves from another viewpoint, I shall defer for the moment their further consideration.

PART III: THE ACOUSTIC NERVE IN DEAFNESS

Earlier in this paper I ventured upon a definite statement that the acoustic nerve is always involved in cases of advanced deafness. While I have not seen this categorically stated before, I believe that it is a view to which most experienced aurists will subscribe. Whoever has failed to receive this impression, has only to reexamine his deafer patients and try to explain their functional status without this assumption, to be convinced of its truth and importance. If we accept this hypothesis, we are brought at once to a second deduction, i. e., the necessity of more careful consideration of the acoustic nerve in relation to deafness and treatment.

There is evidence from various sources, independent and unrelated, of renewed or awakening interest in the nervous element in deafness—even in deafness of the common type often rather loosely spoken of as catarrhal or tympanic. For some time I have been interested in experimental tests of the reactions of deaf individuals to the galvanic current, only to find recently that similar experiments have been, and probably are being, made by men or groups of men in other centres—Philadelphia, Brooklyn, Iowa City. The influence of the high frequency electrical currents in deafness and their therapeutic value, if any, are being studied by groups of competent observers. The x ray current, an agency bristling with risks and capable of producing coincidently temporary stimulation of the acoustic nerve and structural changes ultimately harmful, is being used and advocated by physicians not otherwise affiliated with otological practice. It is also being used experimentally by certain regularly trained aurists. Powerful industrial corporations, backed by enormous resources of capital and perfectly equipped research laboratories, have embarked upon experimental investigations which seem destined to throw light on the nervous element in deafness. In short, there is apparently a growing appreciation of the need of a much broader view of the nature of deafness and of the difficult and intricate problem of treatment.

It is clear that the treatment of the acoustic nerve in cases of deafness can be considered, if at all, only from the following viewpoints: 1, the possibility of local, or direct, stimulation; 2, administration of drugs; 3, elimination of injurious agencies; and 4, hygiene, or regulation of the patient's life.

Direct stimulation.—If we consider the theoretical potentialities of such agencies as tonal stimulation, galvanism, diathermy, the much disputed x ray, and other methods, in the treatment of deafness it is clear that any value they may possess must be attributed chiefly to their direct influence upon the acoustic nerve.

Tonal stimulation.—By this I mean the tuning fork exercises already described. For directly influencing the acoustic nerve, however, they may with advantage be varied by substituting bone conduction for air conduction. Through this medium, tones some octaves lower than are heard by air conduction will often be heard without difficulty; and with large forks placed against the mastoid or lightly against the tragus (i. e., never with sufficient force to close the meatus), there is an appreciable sense of percussion or mass movement in addition or that of tone perception. By way of illustration, let us suppose a case of obstructive deafness in which the lower tone limit has been found to be 160, 170 or 196 d. v. Presumably the nerve has long since ceased to respond to the lower tones as transmitted through the air. What more logical or physiologically rational form of nerve stimulation can be imagined in such a case than one which will force this nerve to respond for very brief periods to tonal stimuli two or more octaves below those commonly reaching it through the disabled conducting apparatus?

Galvanism.—Theoretically the use of the galvanic current in nerve deafness finds justification on the following grounds: 1. The fact, generally accepted by electrotherapeutists, that application of the cathode, or negative electrode, to the vicinity of a nerve causes excitation, or stimulation, of the nerve in question; whereas application of the anode, or positive electrode, causes the opposite (sedative) effect, i. e., creates a condition of diminished excitability. 2. A galvanic current of sufficient strength regularly causes typical reactions of the vestibular nerve (nystagmus, vertigo, and other disturbances). It seems a logical deduction, therefore, that an electric force known to influence the vestibular branch of the eighth nerve, will also reach and influence the acoustic branch of the same nerve.

It is clear that any agency theoretically capable of stimulating a disabled acoustic nerve to better hearing, may also irritate the same nerve to louder tinnitus. We know that many deaf people suffer also from loud head noises; and that there are others with whom tinnitus is absent or so slight as hardly to attract the patient's attention. It has occurred to me that such differences may perhaps admit of a tentative hypothesis: i. e., of hyperirritability of the end organs of the acoustic nerve as a basis of loud tinnitus, and of hypoirritability of the nerve in cases in which tinnitus is slight or absent. With this hypothesis in mind, it is at least theoretically clear that the galvanic current may be beneficial in certain cases and injurious in others.

With me galvanism has taken its place as an occasionally useful agent in the investigation of obscure types of deafness, in which the reactions may throw light on the condition of the nervous mechanism of hearing. It has seemed beneficial in a certain small proportion of cases and harmful in others. Where unfavorable results occur, they will probably be most often in the direction of increased or induced tinnitus.

With *high frequency electric currents* my experience is as yet too limited to justify more than passing comment. It is a most interesting possibility—in theory filling an important gap in the essentials of treatment. Stripped of technical verbiage, it is an agency which enables one to deliver heat to structures below the surface. As such its theoretic therapeutic possibilities are sufficiently obvious. So also, in care-

less hands, are its potentialities of injury. So far as my observation of results have gone, they have on the whole been favorable and encouraging.

With regard to other possibilities of influencing the acoustic nerve: Drugs, elimination of injurious agencies, hygiene, etc., have been mentioned so frequently in connection with all forms of disease as almost to have ceased to register in the mind of the average reader. It has seemed to me, however, that all these agencies might have a more definite significance in the treatment of deafness if considered solely with reference to their influence upon the acoustic nerve.

Elimination of injurious agencies.—First under this head come the extraaural foci of infection from which the ears may suffer indirectly. Of these the most important are: infected tonsils, dental root infections, chronic infections of the nasal sinuses, gastrointestinal infections. Some comparatively recent papers of considerable interest have been apparently based on the hypotheses that a majority of all cases of chronic deafness have their origin in some extraaural infection from which the poison reaches the ear most often by way of the lymphatics. In some respects these papers have led to erroneous deductions in suggesting results from operations for the elimination of such septic foci, which can not as a rule be obtained. Even more misleading have been the reports of cases of deafness in adults, in whom spectacular improvement of hearing has followed tonsillectomy. Such cases are exceedingly exceptional. It cannot be too positively stated that whoever advises tonsillectomy, removal of infected teeth, and other measures, with the expectation of marked improvement of hearing, is likely to find later that he has deceived both himself and his patient. That is one side of the question, which the correlation of experience in any considerable series of cases will definitely establish.

There is another point of view which must not be overlooked. Naturally the partially deaf person, who is constantly or intermittently absorbing septic matter in amounts however small, will respond less favorably to any treatment, local or constitutional. There are also authentic case histories in which the eighth nerve has borne the brunt of an attack by such poisons. The search for and elimination of such a focus is therefore one of the most positive and logical indications, which in cases of deafness may help to limit its advance, and may in certain cases be followed by some functional gain.

Tobacco.—The question of the tobacco habit is in many cases not an easy problem. So many excessive smokers escape obvious injury, and so many nonsmokers suffer auditory defects, that dogmatism is in most cases out of order. To me the most satisfactory approach to this subject is by a quite frank treatement or discussion, explaining to the patient the fact that tobacco is undoubtedly an acoustic nerve poison in certain cases and that it may also promote abnormal changes within the tympanum; that it is impossible to determine definitely how far tobacco is operative in his case, or to what extent its elimination may help to turn the scale toward functional recovery. On this basis one may enlist an intelligent patient's interest and real cooperation in experiments in partial or total abstinence the results of which, if favorable, may prove to his very great advantage.

Hygiene; regulation of the patient's life.—I have frequently heard the statement that among city men who enjoy camp life, those whose hearing is impaired often experience a definite hearing gain after a week or two in the woods. This, if true as I believe it is, should lead at least to a logical deduction: i. e., as to the important bearing on hearing of any readjustment of the patient's method of existence which will improve his general vitality. It also provides a composite picture of all that might contribute to the end in view—i. e., regular hours, exercise in the open air, plenty of sleep, simple wholesome diet, elimination of all that goes under the name of dissipation, freedom from brain fag, or strain. Impossible of realization as all this may seem in a city environment, we have here all the elements out of which to construct a compromise scheme of existence which would help a large majority of these patients.

SUMMARY

To summarize: whatever increases general vitality or vigor tends to improve audition; and whatever hearing gain accrues from such means must be attributed to a better functionating nerve rather than to improve sound transmission. If we use every safe and rational means of stimulating the endorgans of the acoustic nerve; remove all discoverable sources of infection or of nerve depression or injury, and endeavor to raise the tone or functional activity of the perceptive mechanism by improving general nervous tone and vitality, we do all that in the present state of our knowledge is possible in this direction. If we neglect this phase of the problem as of negligible practicability or importance, we neglect a factor which is logically a part of any rational scheme of treatment.

Only as we take into consideration all the factors in the production of deafness and all the potentialities of treatment logically applicable to their correction, shall we obtain for the average patient a hearing gain of permanence or value.

I personally believe that the most important field in otology in the immediate future will be found in the treatment of deafness; that the acoustic nerve and its reactions must be made the subject of more intensive study; that local treatment must aim less at the immediate subjective relief of the patient and more at the slow building up of more normal conditions of intratympanic tension or balance. Definite progress along these lines is the most urgent demand upon otology today.

CONCLUSIONS

1. The first essential in an attempt to amend any system of treatment is the elimination of all useless or harmful procedure.

2. Routine catheter inflation is dangerous to hearing on account of the pathological changes in the membrana tensa to which it may ultimately give rise.

3. Routine or too frequent use of eustachian bougies or sounds is not without risks on account of the subacute reactions in the tubal mucosa to which it may give rise.

4. The first constructive effort in treatment should be an exhaustive search for possible foci of infection. As a preliminary measure, elimination of such a focus is a most positive indication.

5. Tubal disease begins in the pharyngeal end of the canal, and local treatment confined strictly to this region gives the best average results in restoring tubal function.

6. When tubal function is not reestablished by simpler means, surgical measures may prove effective.

7. Tuning fork exercises, used with care, judgment and moderation, provide a rational means of exercising both drum membrane and ossicles.

8. In most cases of advanced deafness the acoustic nerve, as well as the conducting mechanism, is involved; therefore both must be taken into account in treatment.

9. Treatment of the acoustic nerve can be considered, if at all, only from the following viewpoints: 1. Direct or local stimulation; 2, administration of drugs; 3, elimination of injurious agencies; 4, hygiene, or regulation of the patient's mode of life.

10. As there are many factors in the etiology of deafness, so is the pathology one of complexity. No inelastic, rule of thumb routine of treatment will yield the best average results.

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Early Hanot's Disease

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The classification of cases presenting enlarged cirrhotic livers associated with jaundice presents difficulties to both pathologist and clinician. This pertains particularly to certain types of cases which on clinical grounds greatly resemble Hanot's *cirrhose hypertrophique avec ictere chronique,* though under the microscope do not reveal the fine intralobular and intercellular scarring and other changes considered by pathologists as essential to the diagnosis of Hanot's disease. Though this disease had been noted as early as 1846 by Requin (1) and later described by Todd (2) and also by Hayem (3), its authoritative presentation is accredited to Hanot (4) who designated the following features as characteristic: a, youthful, usually male patient; b, chronicity and fluctuation of the jaundice; c, fever, especially in the early stages; d, painless enlargement of the liver and a fairly large spleen; e, the liver on inspection was fairly smooth or slightly granular. Under the microscope could be noted fibrous tissue perilobular and intralobular in distribution, radicular cholangeitis and pseudobiliary canaliculi in and about the periphery of the lobule. The liver cells were usually free from degenerative changes and in this way differed from sections of livers from cases of atrophic or Laennec's cirrhosis. The fibrous tissue had little tendency to contract in the degree noted in atrophic cirrhosis.

This categorical description was from time to time modified by various observers and several groups were designated especially by the French authors with reference to the degree and priority of hepatic and splenic enlargement. A comprehensive volume on the subject was issued by Lereboullet (5) in 1902 in which a large number of collected cases are grouped according to this plan. Reproductions of sections indicate in a number of instances that minor or atypical changes are sufficient in placing the case under the category of Hanot's disease. A number of English observers denied the existence of any characteristic microscopic feature in hypertrophic cirrhosis. Saundby (6) and also F. Taylor (7) stated that pseudobiliary canaliculi existed in cases of atrophic cirrhosis, whereas in some cases of Hanot's disease, it was not prominent. Cheadle (8) asserted that he had not observed a case which corresponded completely with the French descriptions.

The objection to the dogma of a distinct unvaried pathology in hypertrophic biliary cirrhosis is well supported by the recent experiments of Rous (9) and of Rous and Larimore (10). These observations indicate that the diversity of lesions in Hanot's disease is referable to differences in the duct levels at which the injurious agent is active. This contention is supported by the appearance of livers of rabbits in which intralobular cirrhosis has been produced. The case which is here reported contains many characteristic features of Hanot's disease though microscopically the lesions are of minor or early degree.

CASE REPORT

Case.—L. S., a white single girl aged twenty-two and born in the United States, was admitted with the complaint of persistent but fluctuating jaundice. No history of icterus in parents, brothers, sister nor other relatives. The patient had had measles, chickenpox and diphtheria in childhood. She had been a silk winder for eight years; did not use alcoholic beverages.

The patient had been perfectly well until two years before present observation, when she first noticed her skin had a muddy to yellowish appearance and that her urine was highly colored. She also noticed an oppression in the abdomen. With the exception of gaseous eructations, she had no marked digestive symptoms. The icterus increased slowly up to the present time. There were exacerbations of increased jaundice at times associated with feverishness. The skin itched since onset and xanthoma of both eyelids appeared about three weeks before admission.

There was no apparent derangements of hypophysis, pineal, thyroid, suprarenals nor gonads.

The station and gait were normal; no cranial nerve disturbances; deep reflexes normal; eye grounds were normal.

There were 3,530,000 red blood cells, hemoglobin 80 per cent., white blood cells 4,600; differential

blood count normal; blood platelets 250,000; no lymphadenopathy; spleen not definitely enlarged; blood Wassermann reaction, negative.

The teeth were in good condition; stomach and intestines by clinical and röntgenoscopic examinations presented no abnormalities; stools varied from normal to clay color but always gave positive reactions for hydrobilirubin, contained no ova nor parasites and were negative for occult blood. The liver was markedly enlarged particularly in the epigastrium where the lower border was about eight to ten cm. below the normal position. The left lobe was notably enlarged. Röntgenograms were negative for biliary calculi.

The kidneys were not palpable. Urine; specific gravity 1020, acid, faint trace of albumin, no sugar, no casts, a few leucocytes, highly colored but gave only faint or doubtful tests for bile pigments. Pelvic examination was not made, but no abnormality was revealed at laparotomy. There was moderate icterus with jaundiced scleræ; xanthoma of both eyelids; and wide areas of vitiligo on the abdomen.

Certain characteristics of the distribution of the bile pigments may here be emphasized. The blood plasma showed bile staining in dilutions up to 1 to 40. The plasma was dialyzed after the method of Hoover and Blankenhorn (11), but no separate yielding of the bile salts only to the dialysate could be detected. This is in accord with the type of icterus under consideration, though no particular emphasis is placed upon this finding. The urine, despite the apparent bile stained appearance, gave feeble or inconclusive reactions for bile pigments on numerous trials. The stools, though clay colored at times, always gave some reaction for hydrobilirubin.

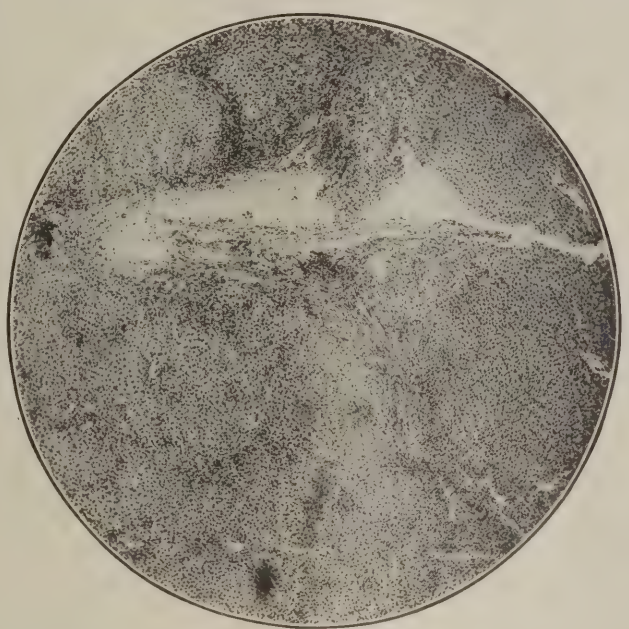

FIG. 1.—Section of liver showing perilobular and intralobular distribution of fibrous tissue.

Because of the vague possibility of hemolytic icterus despite the lack of family history and splenomegaly, the red cells were tested for undue fragility in hypotonic salt solutions. Hemolysis began at .40 per cent., and was complete at 0.30 per cent., indicating normal or slightly increased resistance. Tests for abnormalities in coagulation were done because of the possibility of operation. The figures indicate that despite the persistence of the jaundice, no abnormality could be detected. Coagulation time of blood from the vein was eight minutes; there was good retraction of the clot; bleeding time from the finger was under one minute; prothrombin time was twelve to thirteen minutes.

At operation a large slightly granular liver was noted. No evidence of biliary calculi nor other obstruction to the common bile duct could be detected. A small fragment of liver tissue was excised for examination. Upon miscrscopic study, sections showed the following characteristics: Young fibrous tissue could be noted whose coarser strands were mainly perilobular in distribution with a tendency to intralobular invasion with young fibrous tissue cells and plasma cells. The hepatic cells preserved their integrity to a great extent with here and there slight cloudy swelling. There were small areas of heaped up bile pigments in and about bile capillaries but without any evidence of pseudohypertrophy of biliary canaliculi. Radicular cholangeitis was of minor degree.

In so far as the histopathology is concerned, it could not be said that the findings resemble the categorical description of Hanot unless interpreted as an early process. The absence of splenic enlargement such as in this patient has been noted by Gilbert and Castaigne (12). After operative convalescence, the patient remained in fair health but reported exacerbations of fever and hepatic enlargement at intervals.

SUMMARY

A considerable group of cases of hepatic cirrhosis with jaundice reported in the literature conform to Hanot's clinical description of hypertrophic biliary cirrhosis though the microscopic appearance of the liver is apparently not characteristic.

The evidence of various observers supports the contention that varying histopathology is not inconsistent with Hanot's disease.

The history of a patient with the clinical picture of hypertrophic biliary cirrhosis is cited; microscopic studies show principally early perilobular fibrosis with intralobular invasion of young connective tissue cells and plasma cells.

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Head Injuries*

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The following cases are reported in the order of their admission to the Misericordia Hospital during February, March and April, 1923.

EXTRADURAL AND SUBDURAL HEMORRHAGE WITH MULTIPLE COMPLICATIONS

CASE I.—Hospital No. 2294. P. S., male, aged forty, white, admitted February 17, 1923, at 9 p. m. He had been crushed beneath a trolley car, was unconscious, and in deep shock which active treatment failed to relieve. There were two brief intervals of consciousness, one at 9.30 p. m. and one at 12.30 a. m. Systolic pressure did not exceed 50. The patient died at 5.22 a. m., February 18, 1923. Autopsy at 11 a. m., February 18, 1923, by Dr. C. B. Brown: Compound fracture of the left frontal bone; depressed fracture of right temporal bone with extensive extradural, subdural and cortical hemorrhage; fracture of the nasal bones; fracture of the mandible; fracture of the right clavicle; fracture of the fourth, fifth, sixth and seventh ribs of the left side with extensive hemorrhage into the left pleura and fracture of the second, third, fourth, fifth, sixth, and seventh ribs on the right side; dislocation of the left hip, and compound fracture of the left tibia and fibula.

In this case injury to the brain played but a part in the production of the regnant condition which was shock.

BASAL COMPRESSION

CASE II.—Hospital No. 2296. J. C., male, aged fifty-six, white, was admitted on February 18, 1923, at 10 a. m. He had fallen from a ladder, was unconscious, temperature 97°, pulse 88, respirations 24. There was a large contusion in the right frontal region. Pupils were irregular and did not react to light. Temperature rose to 103°; pulse rate increased to 120, and respirations became 30. The patient did not regain consciousness, there were general convulsions, stertorous breathing, and he died about three and a half hours after admission.

Necropsy was not performed but this seems to have been a case of subtentorial compression.

EXTRADURAL AND SUBDURAL HEMORRHAGE

CASE III.—Hospital No. 2305. P. J. B., male, aged thirty-two, white, admitted February 18, 1923, at 5.30 p. m. He had been knocked down, striking the back of his head. There were no symptoms for ten hours, when he had convulsions, limited to the left side. Lumbar puncture showed cerebrospinal fluid under tension and containing blood. Right subtemporal decompression was done six hours after admission and twenty-four hours after injury. Blood was found beneath the dura; no extradural hemorrhage. The patient died five hours after operation. Autopsy, February 19, 1923, by Dr. W. S. Wadsworth: "Extradural hemorrhage in the posterior fossa, right side, occipital region with compression of the brain in this region. Also subdural hemorrhage in the temporal region on the right side—anterior fossa—fracture of the skull, extending along suture line from the external occipital protuberance down to but not through the petrous portion of the temporal bone. It is a narrow linear fracture."

The subtemporal operation relieved part only—and not the important part—of the compression.

CONCUSSION

CASE IV.—Hospital No. 2311. J. R., male, aged forty, white, admitted February 19, 1923. He had fallen from a ladder, about twenty feet, striking his head and shoulder. Was unconscious for a few minutes, reacted, vomited, and bled from the nose. Temperature was 97.8°, pulse 60, respirations 20; tenderness in left temporal region. X ray examination revealed no evidence of fracture of the skull. He was discharged in good condition on February 22, 1923.

Nearly all cases of brain injury are complicated in the beginning by a certain degree of shock. If the extent of the shock be slight and the intracranial damage limited to concussion, a patient, who on admission appears to be desperately ill, will often recover sufficiently in two or three days to be discharged from the hospital. Unfortunately, however, it is just as often impossible to tell in the first few hours after admission whether a given case is one of shock plus concussion or one of shock plus concussion and compression.

LINEAR FRACTURE OF THE SKULL WITHOUT INTRACRANIAL INJURY

CASE V.—Hospital No. 2369. F. M., male, aged ten, white, admitted February 25, 1923. He had been struck by an automobile. There was contusion of left temporal region of scalp, with ecchymosis of eyelids, abrasion of nose, and bleeding from nose. The patient was not unconscious. There were no changes in pupils, no convulsions, no paralyses. The x ray report was linear fracture in the left parieto-occipital region.

A linear fracture of the skull may be associated with grave injury to the brain, as in Case III, or it may be associated with no demonstrable intracranial damage.

LACERATION OF THE SCALP

CASE VI.—Hospital No. 2463. S. J., male, aged sixty-one, black, admitted March 8, 1923. A brick fell from an upper story and struck him upon the head. There was active hemorrhage from a deep laceration just above the left eyebrow. The patient was not unconscious and there were no symptoms of concussion of the brain. The scalp wound was sutured with drainage. Röntgenological examination

*Reported to the West Branch of the Philadelphia County Medical Society at Misericordia Hospital, November 20, 1923.

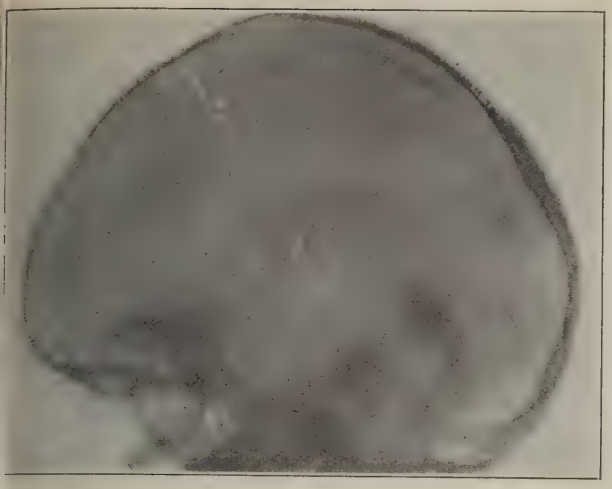

Fig. 1.—Case VIII. Master James C., aged five. Linear fracture ending in a Y extending from the vertex downward to the temporal region just posterior to the coronal suture, ending in a Y with extension backward to the right parietal region.

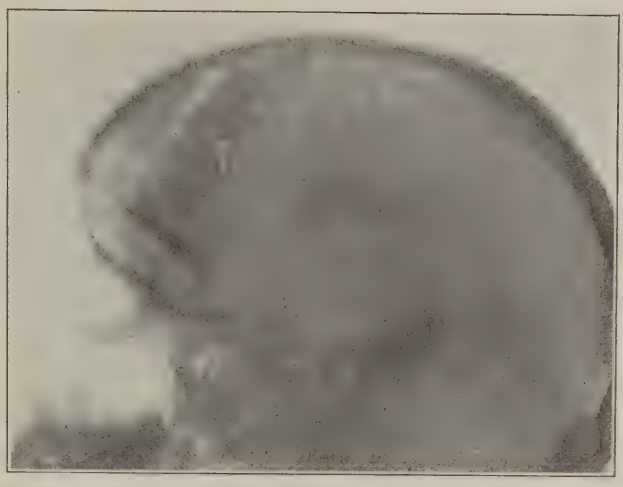

Fig. 2.—Case IX. H. J. W., aged seventeen. A comminuted depressed fracture in the right frontal region located two centimetres in front of the coronal suture and two centimeters to the right of the sagittal suture. The depressed fracture is three centimetres in diameter.

showed no evidence of fracture of the skull. The patient was referred, after three days, to the outpatient department.

The dropping of a stone, or a tile, or a piece of timber or other building material from an elevation upon the top of a workman's head often causes fracture of the vertex. This case demonstrates the well known fact that the history of the accident seldom helps in making a diagnosis of a head injury. Formerly, in cases of head injury we have attempted to elicit from the patient, his relatives, bystanders or other witnesses, on account of the manner in which the violence had been received. If the patient had tumbled or had been thrown in such a manner as to cause his head to come in contact with a hard surface or substance we inquired into the distance of the fall; whether the descent had been abrupt or interrupted, etc. If the head injury had been due to a fist, a stone, a missile, a weapon, or other instrument of trauma, we tried to learn the direction in which the force had been exerted. With no thought of minimizing the possible importance of minute details in history taking, it is merely fair to say that estimations of the extent of cranial or cerebral injury based upon the amount of violence inflicted are not reliable. A fall of but a few feet or a blow of apparently little force has caused serious intracranial hemorrhage. A fall from a great height or a severe blow has resulted in nothing more serious than a contusion of the scalp.

CONCUSSION, SUBDURAL HEMORRHAGE, AND COMPRESSION WITHOUT FRACTURE OF THE SKULL

Case VII.—Hospital No. 2503. J. S., male, aged twenty-one, white, admitted March 12, 1923. He had fallen from an automobile truck, was dazed but not unconscious and vomited. He entered the hospital five hours after the accident. Was drowsy and complained of headache, but there were no other signs or symptoms. Cerebrospinal fluid, secured by lumbar puncture, was under tension and contained blood. March 13, 1923 (about twenty-four hours

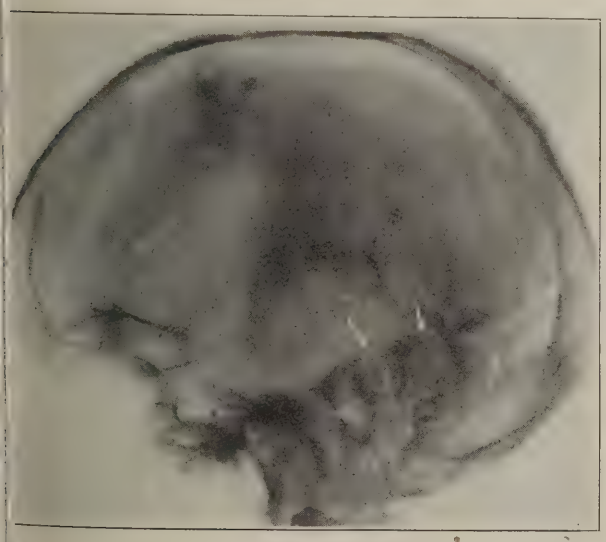

Fig. 3

Fig. 4

Figs. 3 and 4.—Case XIII. James McK., aged sixty-three. Fracture extending through the entire occipital bone beginning just posterior to the right mastoid process and extending over to the left as far as the petrous portion of the left temporal bone. The line of fracture presents a similar curve to that of the occipital suture. It is comminuted, a line of fracture extending into the left parietal bone.

after injury), subtemporal decompression of right side of brain was done and blood clots were removed from the surface of cortex. There was no extradural hemorrhage. Before operation the pulse rate was 60 and after operation it was 90. For the following six days the pulse rate varied between 44 and 48 and the patient during this time was drowsy and slept at frequent intervals. March 20, 1923, the pulse rate was 60. Dr. E. A. Strecker examined the patient, March 30, 1923, and believed his condition might be explained on the basis of severe concussion. His reaction was gradual and he was discharged April 10, 1923, in good condition. Röntgenological examination showed no evidence of fracture of skull.

An uncomplicated fracture of the skull, when the fragments are not depressed and when the line of fracture does not communicate with a wound in the scalp or mucous membrane, is of very little surgical importance. Fractures of the skull cause concern only in so far as they involve the contents of the cranium—the brain, its membranes or bloodvessels. Contrariwise, following trauma to the head, severe intracranial damage may exist without fracture of the skull.

CONCUSSION AND COMPRESSION PROBABLY PREVENTED BY DRAINAGE THROUGH THE LINES OF FRACTURE, OR BY LUMBAR PUNCTURE

CASE VIII.—Hospital No. 2516. J. C., male, aged five, white, admitted March 13, 1923. He fell out of a window and was unconscious for about ten minutes. He reacted, vomited, was drowsy, and resented being disturbed. There was contusion in left temporal region, with tenderness in right parietooccipital region near vertex. Pupils equal and reacted to light; no paralyses, no convulsions. Röntgenological examination showed an extensive fracture of the right side of the skull, as well as a fracture of the external angular process of the left frontal bone. (Fig. 1.) Twenty-five c. c. of cerebrospinal fluid removed by lumbar puncture; fluid under tension but contained no blood. On admission, temperature was 98.8°, pulse rate 140, respiration 30. About twenty-four hours after admission a large swelling appeared in the right parietooccipital region, which at first we thought was merely a hematoma. When, however, the child's drowsiness disappeared shortly after the onset of the swelling, we considered the possibility of the tumor containing cerebrospinal fluid. The patient was observed for seventeen days. On the day of discharge, temperature was 98.4°, pulse rate 96, respirations 23.

The escape of cerebrospinal fluid through the lines of fracture into the subcutaneous tissues in addition to the removal of cerebrospinal fluid by lumbar puncture probably prevented compression of the brain; or the swelling which developed in the right parietooccipital region had no subdural connection and the tension of the cerebrospinal fluid was relieved by spinal puncture alone.

CONCUSSION AND COMPOUND DEPRESSED FRACTURE

CASE IX.—Hospital No. 2585. H. J. W., male, aged seventeen, white, admitted March 21, 1923. He was struck by a street car, was stunned but not unconscious. There was laceration in the right frontal region of the scalp communicating with a depressed fracture. Pupils were equal, slightly dilated, and reacted to light. There was hemorrhage from the right ear and from the nose. Temperature 98°, pulse rate 80, respirations 20. The patient had headache and vomited. Röntgenological examination showed depressed fracture of the right frontal bone. (Fig. 2.) Scalp wound and depressed fragments were excised; dura was not opened. The patient was discharged in good condition fourteen days after admission (April 7, 1923).

Nasal or aural hemorrhage may indicate local injury strictly limited to the nose or ear. It is the presence of cerebrospinal fluid which points to fracture of the skull.

In adults, depressed fractures of the vault, with or without symptoms, should be operated upon and the depressed fragment or fragments elevated or removed. In children, when symptoms of intracranial damage exist, surgeons are united in recommending elevation or removal of the depressed fragments or excision of the hollows made in bones by obstetrical forceps. In children, when no symptoms of intracranial injury accompany these traumatic depressions, some surgeons do not operate at once, believing that the depressed bone, being young and resilient, will often return to its normal level.

FRACTURE OF THE VAULT WITHOUT SYMPTOMS OF INTRACRANIAL INJURY

CASE X.—Hospital No. 2640. W. B., male, aged three, white, admitted March 28, 1923. He had been struck by a trolley car. There were contusions in the occipital region of the scalp and abrasion of forehead and left hand, but absolutely no symptoms of intracranial damage. Skiagraphic examination (done as a matter of routine) showed fracture of the occipital bone extending from a point about three and a half cm. below the vertex downward a distance of about ten cm.—about three cm. to the left side of the midline. The child was discharged in seven days.

SIMPLE FRACTURE OF THE VAULT AND LACERATION OF THE SCALP

CASE XI.—Hospital No. 2660. M. C., female, aged forty-seven, white, admitted March 29, 1923. The patient fell downstairs, lacerating the occipital region of the scalp. No fracture of the skull was visible or palpable through the laceration. No evidence of intracranial injury. Scalp wound was excised and operative wound was sutured. Röentgenographic examination revealed a line of fracture of the right parietooccipital region which extended from a point three cm. behind and three cm. above the external auditory meatus, backward and upward a distance of six cm. There was no evidence of depression of fragments. The fracture was above the level of the scalp laceration. The patient recovered

CONCUSSION AND MULTIPLE LACERATIONS AND CONTUSIONS OF FACE AND SCALP

CASE XII.—Hospital No. 2676. E. H. W., male aged forty-five, white, admitted April 1, 1923. He had been struck by a trolley car, and was unconscious for a few minutes. There was active bleeding from multiple lacerations of scalp and face. Temperature 97°, pulse 98, respirations 26. He reacted from

shock in about three hours. Skiagraphic examination was negative for fracture of the skull.

The appearance of a patient immediately after the accident often tends to give us an exaggerated notion of the gravity of his condition. Unconscious, pale, skin moist and cold, scalp severely lacerated, he often appears to be much worse than he is. We assume, however, that every head injury is serious until we have had time enough to investigate it thoroughly. "Time enough" may mean hours or days.

If, when admitted, the patient is in shock we devote our entire attention to the treatment of shock. The patient will react from shock or die within a few hours. If he reacts from shock, we may be in doubt as to whether we are dealing with a case of pure concussion or with concussion and compression. Here our study of the clinical symptoms is fortified by the information obtained by the use of lumbar puncture, the ophthalmoscope and the röntgen rays.

FRACTURE OF THE SKULL WITHOUT SYMPTOMS OF BRAIN INJURY

CASE XIII.—Hospital No. 2697. J. McK., male, aged sixty-three, white, admitted April 3, 1923. He was struck by an autotruck, but apart from a slight abrasion in the parietooccipital region of the scalp, there were no signs or symptoms of injury. Röntgenological report: "An extensive fracture of the occipital bone involving both sides which are connected by a branch extending transversely, etc." (Figs 3 and 4.)

In this instance, the fracture of the skull did not cause as much inconvenience as the average broken nose.

CONCUSSION OF THE BRAIN AND COMPOUND FRACTURE OF THE SKULL

CASE XIV.—Hospital No. 2705. W. W., male, aged thirty-three, white, admitted April 4, 1923. Fell from a scaffold, sixty feet, striking his head and shoulder. There was laceration of scalp communicating with a fracture of the left frontal bone. The patient was conscious, pulse 60, temperature 100°, respirations 20; pupils equal and reacted to light, no paralyses, no convulsions; blood pressure 130-80. No hemorrhage except from the scalp wound. Röntgenographic report: "Linear fracture branching like a Y into the left frontal sinus and extending upward from the upper brim of the orbit a distance of about two inches." Débridement and suture. Dura not opened. Uncomplicated recovery. Discharged April 15, 1923.

Because of the danger of infection compound fractures of the skull are operated upon early. This fracture was compound via the scalp wound as well as by reason of its opening into the frontal sinus.

COMPOUND FRACTURE OF THE SKULL

CASE XV.—Hospital No. 2815. H. J., male, aged twenty-four, white, admitted April 14, 1923. He fell from a ladder, was not unconscious, and walked to the hospital where his scalp laceration, which communicated with a fracture of the skull, was dressed. He declined to be admitted to a ward and left the hospital. Next day (April 15, 1923) he returned to hospital and permitted examination by x ray, and remained in a ward only one day (until April 16, 1923) and departed, not to return. The röntgenographic examination: "Linear fracture of the left parietal bone, extending downward and forward, etc." There was no evidence of depression.

Occasionally, the victim of a head injury resists the surgeon's efforts to treat him. Whether such conduct be a manifestation of cerebral injury or the natural performance of a normally disagreeable person could be determined in a given case, we fancy, by the family physician who has been acquainted with the patient previous to the head injury.

Grateful acknowledgment is here made to Dr. C. P. O'Boyle for the skiagrams in these cases, and to Dr. Alexander E. Burke who assisted in the preparation of the report.

Extirpation of Cervical Rib Under Local Anesthesia

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The seventh cervical vertebra differs from the first thoracic in having an opening through the transverse process for the transmission of the vertebral artery and vein. The anterior portion of this transverse process arises by a separate centre of ossification, and and by its abnormal growth and prolongation becomes a cervical or supernumerary rib.

There are true and false cervical ribs. The true cervical ribs have a head, neck and shaft, and articulate as do the thoracic ribs. The false ribs, which consist of only a shaft, articulate with the tip of the transverse process.

About five tenths per cent. of the x ray plates of the neck show evidence of a cervical rib, but only a small proportion (five to ten per cent.) of these give rise to trouble. They are more common in women than men, more often bilateral than unilateral, and if unilateral, occur more frequently on the right side.

The symptoms referable to cervical ribs usually present themselves under one or all of three groups, as follows: first, neurological; second, vascular, and third, tumor formation, either visable or palpable in the supraclavicular region. On account of the anatomical arrangement of the structures in the neck it is easy to understand the sequence of symptomatology. As the tip of the rib comes forward it comes in contact with the brachial plexus and usually the fibres forming the ulnar nerve, causing paresthesia, weakness, numbness, etc., especially to the little

finger, and which is more marked in the morning upon rising. The motor functions of this nerve are next involved, causing a loss of the finer movements of the hand, such as are required in sewing, writing, and piano playing. The next structure pressed upon is the subclavian artery, causing the various vascular phenomena, such as lessening of the pulse pressure in the radial artery on the affected side, sensation of coldness after long use, and slowness in the return of color to the skin after placing the hand in a basin of cold water. The rib pushing the artery upward often causes a pulsation in the supraclavicular region, with at times (twenty per cent.) tumor formation, exhibiting a thrill and leading to the erroneous diagnosis of aneurysm. The rib now in its growth comes in contact with the scalenus anticus muscle, which structure separates the subclavian artery from the subclavian vein. Venous changes, such as congestion and edema, are therefore never present. Verification of the diagnosis of a cervical rib is made by the x ray.

Fig. 1.—True cervical rib, having distinct articulation with the transverse process of the seventh cervical vertebra, and extending in a curved manner downward and forward about three and a half inches.

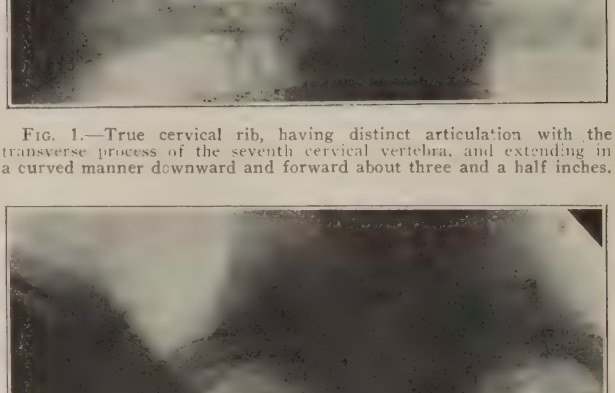

Fig. 2.—End results; all symptoms relieved entirely.

The treatment is entirely surgical, and consists in removing the rib with its periosteum, so it will not regenerate, through an incision parallel to the anterior border of the trapezius and scalenus medius muscles.

Case I.—Male, white, aged twenty-four years, with a negative history except that for several years he had been a morphine habitue, and only prior to operation had taken the cure. He complained of numbness and weakness in the right arm and forearm, a condition which began nine years ago with paresthesia along the structures supplied by the ulnar nerve, especially the little finger. He was unable to hold a pencil in writing for any length of time. These symptoms were always more marked in the morning, so that the patient dreaded to see the morning approach, for fear that his right arm would be completely paralyzed. The symptoms were always more exaggerated after prolonged use of the arm.

Physical examination disclosed a fullness in the supraclavicular fossa, with slight pulsation on palpation. There existed a distinct difference in pulse pressure to palpation of the two radial arteries, the right being distinctly weaker. The patient placing both hands simultaneously into a basin of cold water, it was noted that the natural color returned to the left hand in two minutes, while in the right it required four minutes. The physical examination was otherwise negative, except that the heart showed a marked hypertrophy, the apex beat being in the seventh interspace at the nipple line. On auscultation a harsh murmur was found, which was both systolic and diastolic in time.

The clinical diagnosis was right cervical rib. X ray examination disclosed a true cervical rib, having a distinct articulation with the transverse process of the seventh cervical vertebra, and extending in a curved manner downward and forward about three and a half inches (Fig. 1).

Operation.—The skin was anesthetized with a one per cent. apothesine solution by using a fine needle on a line parallel with the anterior border of the scalenus medius muscle, curving the base slightly toward the clavicle. The deeper structures were next infiltrated with the same solution, and by blunt dissection the scalenus anticus was freed high up, on a level with the upper margin of the seventh cervical rib. By continuing the blunt dissection we came down upon the neck of the cervical rib. The structures around the rib were next infiltrated with the apothesine solution, and then by means of a periosteotome they were pushed forward, exposing the neck of the rib. A curved depressor was then passed beneath the neck of the rib to protect the pleura, and by means of pointed bone cutters the neck of the rib was severed. The shaft was then grasped with bone forceps and by blunt dissection removed in its entirety with the overlying periosteum.

At only one point in the course of the operation was the pain of any consequence, and that was when the tissues were dissected from the shaft of the rib after it had been cut. At this point the patient was given a small amount of ether, just enough for the psychic effect, and the rib was evulsed before he had even reached the primary stage of anesthesia. The mask was then removed and the remainder of the operation completed painlessly. Because of the fact that the patient had been a morphine habitue, no preliminary sedative was administered, anesthesia being produced by apothesine alone. The radiogram in Fig. 2 shows the end results. All symptoms were relieved entirely.

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Relation of Cholesterol Metabolism to Surgical Problems of Cholelithiasis and Infection of the Biliary Apparatus*

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Cholesterol is a lipoid body. The metabolism of cholesterol is intimately bound up in the function of the liver. The available evidence, both from experimental animal work and from comparative physiological sources, seems to show conclusively that the cholesterol bodies are primarily derived from the diet and are absorbed from the intestinal tract into the blood stream. On reaching the confines of the liver, the excess of the quantity, which should normally be present in the blood stream, is taken up, is excreted by the liver cells and furnishes an important constituent of the bile. The latter, on reaching the intestinal tract, forms an additional source to the food supply from which cholesterol is also absorbed into the blood. A complete circuit is thus established. It follows from these facts and from many studies made by various workers in different laboratories that: 1, The cholesterol content of the blood of various animals and of different human races depends upon the cholesterol (lipoid) content of the food. 2, The cholesterol content of the bile is dependent upon the cholesterol content of the blood. 3, A marked increase of the cholesterol content of the blood will cause a marked increase of the cholesterol content of the bile. The converse of this is also true.

It has also been empirically established that: 1, The cholesterol content of the blood is lowered by the presence of fever (infection). 2, The cholesterol content of the blood is increased: a, by the presence of other diseased conditions especially atherosclerosis, diabetes and nephritis; b, during pregnancy and the postpartum period; c, by the presence of obstruction in the common bile duct. If the obstruction is not absolute however, as indicated by the degree of the accompanying jaundice, the cholesterol content of the blood may not be increased.

In normal human bile the cholesterol content varies from twenty to eighty mg. to 100 c. c. In normal human blood the cholesterol content varies approximately from 150 to 180 mg. to 100 c. c.

Theories have been developed in regard to gallstone formation. The first of these, sponsored by Naunyn, assumes similarities in the pathological processes of catarrhal inflammations of all mucous membranes, attempts to show that an increased formation of cholesterol accompanies all of these inflammatory conditions, and finds in this conception the chief underlying factor in gallstone formation. The presence of bacteria in the centres of some stones and in the gallbladder wall lends support to this hypothesis.

The facts which I have previously summarized regarding the metabolism of the cholesterol bodies and their physiological and pathological variations form the main support of the theory of an opposing group. Aschoff and Bacmeister were the first to point out that, morphologically, the gallbladders in which pure cholesterol stones are found show practically no inflammatory reaction.

As one meets these conditions on the operating table the various pathological pictures which one encounters are essentially the following:

1. Gallbladders of normal gross and histological structure containing usually a thin bile together with a variable number of stones; bacteriologically, these are frequently sterile. Such gallbladders may be of normal size, or more or less dilated. Stones sometimes coexist in some part of the terminal duct system.

2. Hydrops of the gallbladder due to the presence of a single, large stone impacted, more or less completely, in the neck of the gallbladder. The contained bile is watery and is most frequently sterile.

3. Gallbladders in which infection has occurred, containing a thin pus, or more rarely a thick, creamy pus with stones. The walls of the gallbladder are thickened and edematous and the mucous membrane is very frequently gangrenous. Abscesses may be present in the wall of the gallbladder, between it and the liver bed, or, more rarely, in the substance of the liver a short distance away. Various grades of hepatitis are always present. The stones contained in the gallbladder may be numerous indicating that conditions correspond to the first group plus added infection; or only a single stone is present indicating that a hydrops has become secondarily infected. In all the cystic duct becomes shut off. Stones may coexist in any of the large ducts.

4. Gallbladders which have shrunken to less than their normal size, and the walls of which show a chronic productive inflammation, frequently with areas in which evidence of a more recent inflammatory reaction is discernible. There is a variable amount of pericholecystitis. The contents of the gallbladder may consist of stones and bile, which may or may not be purulent; or thick emulsions of cholesterol containing fragmentary stones are present. When the cystic duct is open the condition represents the end results of groups 1 and 2; when the duct is obliterated it is the end result of group 3.

5. Inflammatory gallbladders varying from catarrhal to suppurative types of inflammation but without the formation of stones.

6. Gallbladders corresponding in structure to those in group 4 but without the formation of stones. These represent the end results of the cases in group 5.

The various forms of calculi which one encounters are the following:

1. Practically pure cholesterol stones containing from seventy-five to ninety-eight per cent. of cholesterin. According to Wilensky and Rothschild these correspond to precipitation stones according to the theory of Aschoff and Bacmeister.

*From the Mount Sinai Hospital, New York. Read by invitation at a regular meeting of the Eastern Medical Society, October 13, 1922.

2. Stones containing from seventy-five to forty per cent. of cholesterin. These stones may have resulted secondarily from those in the first group and are probably due to some extraneous superadded factor.

3. Small faceted stones with nuclei of bile salts and some cholesterin and outer shell consisting almost entirely of cholesterin. These calculi are of an infectious origin and contain from five to forty per cent. of cholesterin.

4. Bilirubin calcium stones. These stones are rarely found in the gallbladder, much more frequently in the intrahepatic ducts and occasionally in the common bile duct. Practically all of the stones found in cases of intrahepatic cholelithiasis are of this nature. These stones usually have an infectious origin. The cholangitis which usually coexists can be considered most commonly as a primary factor.

The laboratory facts which I have just outlined seem to indicate that in clinical medicine both the theory of Naunyn—infection—and the theory of Aschoff and Bacmeister—disturbed metabolism—are equally operative, and that no one occurs to the total exclusion of the other. In certain of the cases the diseased condition of the bile passages are initiated by a bacterial infection. It may remain a purely infective process without stone formation, or it may cause changes in the excreted bile with subsequent stone formation. In other cases there may be a primary disturbance in the cholesterol metabolism leading to a precipitation of stones and finding its inception most frequently during the physiological period of pregnancy.

For any individual case the available knowledge indicates that the biological sequence of events may be one of three:

1. The pure infections. The element of the metabolic disturbance does not enter here unless there is a complicating obstruction of the common duct. The affection begins as a catarrhal cholecystitis, or as a frankly suppurative process and, if no intervention ensue, subsides more or less incompletely; when repeated recrudescences of infection are permitted the lesion terminates in the contracted and shrunken gallbladders previously described.

2. The cases that are due to disturbances of metabolism. For the cases in this group pregnancy plays the most important rôle. As indicated abundantly in clinical medicine, pregnancy is the most frequent precursor of cholelithiasis. During the entire period of pregnancy there is a physiological increase in the cholesterol content of blood and bile and the hypercholesterolemia continues for a variable time after the evacuation of the uterus. There are normal compensatory mechanisms which, under ordinary circumstances, take care properly of this excess and prevent any untoward phenomena from occurring. However, the hypercholesterolemia of pregnancy may reach to such a degree as to make futile the normal compensatory mechanism; then the supersaturation of bile with cholesterol bodies is reduced to the normal by a precipitation of stones in some portion of the biliary apparatus, almost always the gallbladder. If no further hypercholesterolemic crisis occurs, a quiescent period follows and many times this continues without symptoms for the remainder of that particular person's life; or the patients have symptoms (gallstone colic) which are due to the mechanical effects of stones acting as foreign bodies. Repetitions, however, of this physiological increase of cholesterol bodies (pregnancy) are likely to occur —perhaps frequently repeated at regular or irregular intervals, so that there will be new hypercholesterolemic crises with their corresponding production of calculi. This explains the finding of stones in a given gallbladder of various sizes and chemical compositions and apparently of various ages. In these metabolic disturbances the bile passages undergo changes mechanically, owing to the presence of stones acting as foreign bodies.

3. Combinations of infection and disturbed metabolism occur either simultaneously or alternately and with different degrees of severity. Depending on the factor which is paramount, on the intensity of the latter's manifestations, on the stage of the process, or on the presence or absence of the many complicating factors, which now become numerous, the pathological and clinical picture shows the wide variations previously indicated.

It must be conceded that in any given case the diagnostic value of any determination of the cholesterol content of the blood is a variable and dubious one. Wilensky and Rothschild have summarized those gallbladder conditions in which the cholesterol content of the blood can be normal as follows:

1. In the presence of stones in a normal gallbladder, without common duct obstruction and with or without high temperatures.

2. In the presence of a chronically inflamed gallbladder containing stones without common duct obstruction and with or without high temperatures.

3. In the presence of any of these conditions with incomplete obstruction of the common bile duct.

4. In the presence of an empyema of the gallbladder, with or without stones, with fever, and with no obstruction in the common bile duct.

5. In conditions as in the preceding division (4) with partial or complete obstruction in the common bile duct.

The finding of a hypercholesterolemic condition, while usually pointing to some disturbance of the cholesterol metabolism and in the bile passages, is always subject to correction in the presence of any of those complicating factors (atherosclerosis, diabetes, nephritis), mentioned in the earlier part of this communication, which, by themselves, are capable of increasing the cholesterol content of the blood. And when this correction is to be made it becomes difficult, if not impossible, to decide whether the entire excess of the cholesterol content of the blood above the normal is due wholly, or only in part, to these complicating factors. The situation becomes all the more complex when it is known that it is possible to obtain hypercholesterolemic figures in other diseased conditions.

The occurrence of a hypercholesterolemia can be used as a diagnostic factor in only one instance. When a distinction must be made between the jaundice due to cirrhosis of the liver and the jaundice due to common duct obstruction the finding of a hypercholesterolemic condition indicates that obstruction is present. Cirrhotic conditions uniformly give low figures for the cholesterol content of the blood.

A proper interpretation of any blood finding is

only possible after knowledge is obtained of the actual anatomical conditions present.

It is regrettable that for the ordinary case of gallbladder disease these facts and studies in regard to the relationship of the cholesterol metabolism to the demonstrable pathology have furnished or added no decisive aid of a therapeutic nature. One can influence the cholesterol content of the blood and bile by dietary means, but, unfortunately, the pathological changes in the gallbladder, bile passages, liver and associated organs are of a mechanical nature and are only correctible by surgical means. What has surgery to offer?

Cholecystectomy fulfills a double purpose:

1. It removes a local focus of infection. When the latter is strictly limited to the gallbladder this can be done completely and the effect is a permanent one. In the cases, however, in which the focus of infection has spread beyond the gallbladder itself, either into the ducts or, perhaps, into the liver substance, surgical removal of the entire infected area is not feasible or possible, and a complete cure follows only when efficient drainage is carried out.

2. It removes the biliary reservoir with its contained stones and stagnated, infected and changed bile. The latter represents part of the endproducts of any disturbance of metabolism which had antedated the operation; there is no effect upon the metabolic activities themselves. In order to obtain any effect upon the latter it is necessary to institute bile drainage either by leaving the stump of the cystic duct open (an inefficient method) or by making an additional opening into the common or hepatic ducts (a most efficient method).

Cholecystostomy accomplishes the following objects:

1. It affords a surgical method, inferior to cholecystectomy, for draining the infected area. This does not presuppose that the focus of infection in the gallbladder has been removed and apparent healing may take place before this source of infection has completely disappeared. Recrudescences of infection may therefore be expected and do actually occur; they form one of the important causes for the recurrence of symptoms after operation.

2. Bile drainage is a necessary concomitant and sequel of cholecystostomy; and the method permits a better removal of the endproducts of disturbances of metabolism. The effects of bile drainage have been summarized by Wilensky and Rothschild as follows: A. With common duct drainage the system is rapidly depleted of the accumulated products of an abnormal metabolism. B. Gallbladder drainage does not accomplish this extreme effect unless there be a concomitant obstruction in the common bile duct. C. These effects are obtained when the operation is properly done and all obstructions removed.

The good effect of bile drainage upon a disordered metabolism is probably in the nature of a recuperative process, founded upon the removal of abnormal amounts of excretory products; this seems to have marked similarities to the phenomena of fatigue and rest in muscle tissue associated with the accumulation and discharge of excretory bodies produced by cellular activity.

To these effects may be added the following: D. Bile drainage is an invaluable adjuvant in the control of any focus of infection in the intrahepatic biliary apparatus. For this purpose it is necessary to continue the drainage for many months' time.

The continued loss of bile from a biliary fistula has a deleterious effect upon the animal organism. The symptoms that are likely to appear include, a, disturbances of digestion frequently associated with vomiting; b, constipation of varying degrees due to an absence of bile from the intestinal tract; c, depreciation in the general condition of the patient conducive to a lessened general resistance to any kind of mechanical (operative) or bacterial trauma. These effects may be prevented by collecting the escaping bile and feeding it to the patient by the stomach tube. As regards the cholesterol content of blood and bile, our studies (Wilensky and Rothschild) have shown that, 1, In uncomplicated cases the figures do not change appreciably and the variations are within the normal range. This refers especially to cases without bile drainage and to those in which previous to operation the blood content of cholesterol was within the normal range. 2, When obstruction is present before operation the complete removal of this is followed by a fall from the preoperative hypercholesterolemia, the figures reaching a normal level fairly promptly. 3, If the preoperative figure has been low because of the presence of much fever (infection) the drop of temperature following the operation may be accompanied by a rise in the cholesterol content of the blood to the normal level. 4, When the postoperative decrease of the cholesterol content of the blood has been large and there had been no antecedent obstruction the diminution is due to a lipoid free diet.

It appears then from all of these facts that the choice of the proper operation efficiently carried out, combined with the intelligent use of bile drainage, restores the individual patient to that previous condition of life and health when no hypercholesterolemic crisis had yet occurred and when no bacterial infection of the bile passages had yet taken place. When the primary factor at fault is a disturbance of the cholesterol metabolism the essential thing to be accomplished is an adequate and prolonged bile drainage in order to deplete the body of a supersaturation with cholesterol. When the primary factor at fault is infection the removal, or adequate drainage of the infected area is indicated. When, as happens frequently, perhaps most frequently, both of these causative factors are working together, both of these indications must be met in order to obtain the most satisfactory result. The cause of any disturbance of metabolism is influenced in no way. And any repetition of the cause for the disturbance—and I speak especially of pregnancy—is always fraught with the danger that a new hypercholesterolemic condition may follow.

In cases of recurring symptoms after primary gallbladder operations sufficient to warrant secondary explorations a variety of lesions are found. The most frequently demonstrated include, a, adhesions of various kinds; b, stones in the gallbladder or ducts or in both; c, persistence of infection; d, biliary fistulæ; e, common duct obstructions of various kinds including malignancies; and, f, chronic pancreatitis. In some of the cases more than one of the conditions enumerated are found.

Little attention has, however, been placed upon the small number of cases with recurring symptoms in which the underlying disturbance of metabolism continues or recrudesces because of insufficient drainage or because of other reasons over which we have no control or about which we have no knowledge. The symptoms due to this cause may be mild, or most severe, may consist of mild indefinite abdominal pain, or may be marked by attacks of violent pain with jaundice, vomiting and fever; and all of these show on examination a hypercholesterolemia. All of these except, perhaps, the most severe, can be controlled by rigid attention to the diet; this should have excluded from it all lipoid bodies. For the most severe, abdominal exploration and bile drainage are indicated.

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Alcohol Taxation and Delirium Tremens in Denmark*

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As a rule it is difficult to compile statistics dealing with chronic alcoholism. There exist two reasons for this. On one hand there are no hard and fast lines within which chronic alcoholism can be defined. On the other there is scarcely any field of medicine in which purely personal points of view are so dominant as in the judgment of what must and must not be ascribed to chronic alcoholism.

However, there is one disease consequent to chronic alcoholism in which these difficulties are not so dominant, and that is, delirium tremens. This disease occurs seldom in atypical forms, in which the diagnosis is difficult. Individual opinions play scarcely any rôle in the judgment. The actual number of cases of delirium may not be an index to the number of cases of chronic alcoholism, but a study of the great fluctuations in the number of cases of delirium tremens should afford a rough guide to the fluctuations of the incidence of chronic alcoholism. Taking into consideration the problem of such fluctuations I have examined a number of cases of delirium tremens treated in the Kommunehospital of Copenhagen during the last twenty years.

Copenhagen, which has a population of about half a million, has several municipal hospitals, but only one department for mental diseases. All cases of delirium tremens, which the physicians in Copenhagen want to send to the hospital, are collected in this department, and it must be said that nearly every case of delirium is sent and admitted to the hospital. We have counted the cases according to the summaries of the reports for every month. In these cases are included both the uncomplicated cases and those which are complicated by pneumonia and other diseases, and the abortive cases. The figures are:

Year	Men	Women	Total	Year	Men	Women	Total
1903	325	18	343	1913	248	19	267
1904	240	22	262	1914	246	9	255
1905	296	30	326	1915	239	10	249
1906	340	16	356	1916	293	17	310
1907	430	17	447	1917	78	4	82
1908	388	14	402	1918	9	..	9
1909	316	22	338	1919	11	..	11
1910	319	17	336	1920	18	..	18
1911	317	28	345	1921	26	..	26
1912	239	22	261	1922	11	..	11

If we consider these cases we shall see that they may be divided into two groups: In the period of 1903-1916 the number of cases of delirium tremens ranged from a minimum of 249 in 1915 to a maximum of 447 in 1907, the average for this period being 321. In the period of 1918-1922 the number of these cases ranged from a minimum of 9 in 1918 to a maximum of 26 in 1921, the average being 15 cases every year (the average error is insignificant in these cases). Such a decrease, corresponding to a diminishing of the cases about ninety-five per cent. can not be a casual occurrence. What may be the cause of this enormous decrease?

There was no change in the staff of the hospitals in 1917. In 1919 a new chief physician was appointed for this department, and while such a change might have had some influence on the diagnosis in many cases, it is highly improbable that it would have any influence on the diagnosis of delirium tremens which is so characteristic and typical. The most natural thing would be to consider the decrease in relation to the legislation on alcohol in the year 1917 (partly caused by the German submarine war).

Before mentioning this legislation we shall see in what manner the cases are represented in 1917.

	Total		Total
January	31	July	2
February	19	August	4
March	16	September	0
April	4	October	0
May	3	November	2
June	1	December	0

[1]In March there was one case in a woman, in April one case, in May two cases; all other cases were in men.

It will be seen that the great decrease in 1917 began at the transition from March to April.

We will now discuss the acts which appeared in 1917 concerning the production and sale of alcohol.

On February 27, 1917, a regulation from the Minister of the Interior prohibited the sale and serving of alcoholic drinks. This absolute prohibition lasted only a month; on March 23, 1917, this law on prohibition was repealed, and since that time we have had no prohibition of alcohol in Denmark.

In the same ministerial notice from March 23d maximal prices on aquavit, whiskey and other strong spirits were fixed according to an act of March 17, 1917, to which was added an additional tax on spirit so that the price in retail trade was doubled. The price of aquavit, which before the war had been about seventy ore (twenty cents) a bottle, was now increased to more than two kroner (sixty cents). Finally, December 21, 1917, a law was passed providing for the taxation of spirits, after which the price was increased to about ten kroner (three dollars).

*From the department for nervous and mental diseases in the Kommunehospital in Copenhagen.

The legislation during 1917 concerning alcohol seems not to have had any considerable influence on alcoholism apart from the enormous taxation of the strong spirits. Only on two other points has the legislation concerning alcohol some interest. As there was not sufficient barley it was decided that only eighty per cent. of the amount of barley which had been used in 1916 must be used for brewing in 1917 and succeeding years and the breweries which before brewed Bavarian beer partly with three per cent. partly with four per cent. alcohol could brew only with three per cent. Undoubtedly this moderate restriction has not had any influence in comparison with the enormous taxation on the strong spirit.

Another restriction concerning aquavit would seem to have been more significant, in that it was decided in a ministerial notice of March 6th, that there must be distilled only one quarter of the amount of aquavit that had been distilled before. But this restriction has had no influence, because the high taxation of aquavit has produced such a diminishing of the sale of aquavit that the population has not requested the permitted twenty-five per cent. After 1917 anybody in Denmark at any time could buy a bottle of aquavit if he would pay three dollars for it. My personal impression has confirmed the significance of the high taxes. When I asked hospital patients, who had been drunkards before, what was the cause of their diminishing use of spirits, the answer has constantly been, because aquavit has been so expensive.

It will be seen from the figures that from the year 1917 the cases of delirium have reacted very promptly to the temporary prohibition. But it will also be seen that there has not appeared any reaction since the annulling of prohibition. Further, the figures indicate that the slight increase in the number of cases from 1918 to 1921 is compensated by a decrease in 1922.

What conclusions may be drawn from these figures? We can conclude that a good principle has been followed in Denmark concerning alcohol legislation. It has been possible, without prohibition, merely by the high taxation of strong spirits, to diminish chronic alcoholism in such degree that ninety-five per cent. of the cases of delirium tremens have disappeared.

It is very possible that absolute prohibition would have had the same effect, although the impression from the neighboring countries of Denmark, viz., Norway and Finland, which have alcohol prohibition, does not seem to be so good. At any rate, it seems to be a fact that the phenomena of prescriptions for whiskey from the physicians and homebrewing are very rare in Denmark.

Education Stoops to Conquer

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How much realism is the modern classroom capable of? That is *the* question for educators—including parents and priests, editors and philosophers of ethics. We undoubtedly fail to accredit children with the shrewdness (shall we call it wisdom?) they actually possess. In relation to "worldly" matters they are wise beyond their years. Is it not so? Children of fourteen, bred in a tenemented environment, habitués of the moving pictures and the musical comedy and the vaudeville and the melodrama, night wanderers amid a varied crude life of suggestion and excitation, are not in truth what fond parents thoughtlessly call innocent and unsophisticated. These alert youngsters understand many of those private details of our hectic life which adults, in their blindness, assume to be the prerogative and property of grownups alone. To this the more observant among our teachers will testify. We must, in behalf of scientific truth and of human welfare, courageously reconsider our familiar attitudes toward children and the Age of Innocence. No duty of educators can be more urgent than such a realistic study of child life as will illuminate the inner life of the young.

No problem in the history of education can be more significant than this: the sincere pursuit of truth, the whole truth, concerning childhood. There are too many evilly wise young children in our midst for us longer to dare to blink the terrifically meaningful facts brought to life by the specialists in sex and the psychopathologists. We must conquer our squeamishness and face the facts. Our school education, to its eternal discredit be it said, has not bothered its feebly virtuous head about the profound problem of sexual truth and candor.

The reasonable, the common sense thing to do is to fetch into the classroom all those blind alley experiences which perturb and perplex and terrify our youthful ones, experiences and imaginings and strange surmises which influence the mind (for good or evil) for the remainder of life. If the schoolroom cannot invent means and methods whereby the miscellaneous vulgarization of the gutter life—to employ a harshly graphic phrase—may be sifted and purged and sublimated and made beautifully valuable for youth's everyday life, the miscarriage of education will be woefully complete. Against that distressful time, what sane measures of prevention may we inaugurate? The first sagacious step toward purification of gutter experience is the frank recognition of the tense vitality, the gripping interest of the thing we would refashion.

What are the juvenile possibilities of selfrealization in a frank world of selfanalysis and of socalled early maturity? May it not be wise for us to encourage children to speak their subconscious minds, without apology or shame or fear, on the vital street corner themes of sweethearting, sex yearning, dreams (day dreams and dreams at dawn), the life of peeps and secrecies and strange familiarities, the romance of gang morality? The psychosexuality of children arrived at puberty must

become a subject of deep informal study in the classroom. And why not? Group analysis, under educational guidance, can effect a transformation of folly into wisdom such as no other guidance can confer. Honest introspection dissipates dirty frivolity and prepares the mind for honor. Not a panacea, but a wise first aid! What worldly wise insights are the young capable of, in our swift and penetrating times, without excessive injury to their physical or intellectual integrity? The modern classroom is not sufficiently experimental (the brave efforts of Huxley and Spencer notwithstanding). It lacks the analytical mode of approach. It lacks the Socratic inspiration. Intellectual honesty is not its conscious goal! Pretense and the solaces of hypocrisy are its abiding sources of high endeavor. The average pedagogue is incredibly timid, a feeble and inadequate vessel of light, a battered fragment of reality. Selfrealization has been in his (and her) life nothing more creative than a traditional symbol of idealism beyond attainment for the common run.

What shattering irony in Dr. Montessori's discovery that the methods she had found successful in dealing with defectives, like idiots, were, most of them, quite applicable to normal children—for example, to the pupils of our ordinary public schools—and that these ordinary schools needed just such a transformation in method and spirit as she had achieved in her own experimental poor school! The profound influence upon modern educational ideals and realizations of medical minded educators is deserving of a large commemorative volume in itself. To enumerate only a great few: John Locke, Rodriguez Pereira, Edouard Seguin, William James, Boris Sidis, Maria Montessori, Havelock Ellis, G. Stanley Hall, Sigmund Freud. The modern medical theory of education was stated and finely illustrated in John Locke's attitude toward educables: "Locke, fortunate in combining the experience of a physician with that of a teacher, hit on the truth, almost by accident, that there can be no true education which does not adapt itself to the nature of the learner." A revolutionary conception in modern education! Continues Boyd, the distinguished English writer on education, "All through his discussion of education he thinks of the pupils as a doctor thinks of his patients—as individual cases to be diagnosed separately and to be dealt with by the methods best suited for their special temper and condition." Profound doctrine, this, with which the vast majority of pedagogues have not yet caught up. That the insights of the medical psychologist should be endowed with a momentous significance for the philosophy of education (and the education of philosophers) need surprise no one even slightly acquainted with the deep probing researches of psychoanalysis and the discoveries of the psychopathology of everyday life.

Herbert Spencer knew the basal importance of the physiology of education, and his pellucid book on *Education* still remains a classic exposition of a sound scientific practice. Today we know the overwhelming importance of the psychopathology of education as process and as ideal. To the sage doctor we humbly look for the sanest educational guidance. For education at its profoundest is a psychotherapeutic art. In sober truth, all of us in our aspirational moments dream of education as the panacea. It might well have been only yesterday that Edouard Seguin wrote his famous criticism of school education, so vastly applicable to the contemporary situation does its prove itself to be. "In the people's schools, thousands of pupils are herded together as in so many barracks, without the least thought being given to their diverse physical aptitudes, or their varied physiological needs, or their different mental dispositions; and day by day four or five rations of intellectual provender are served out to them indiscriminately. Memory is the one faculty called into play; all the other faculties of body and soul are neglected, and their organs are allowed to become atrophied and useless."

In his passionate denunciation of current educational ideas and practices, Professor Boris Sidis admonishes us that "our educators are narrow-minded pedants. They are occupied with the dry bones of textbooks, the sawdust of pedagogics, and the would be scientific experiments of educational psychology." His book, *Philistine and Genius,* is a masterpiece of invective and of critical commentary. In his view there is no redeeming aspect of our school system to which the lover of wisdom can award the smallest merit. He says quite bluntly that our socalled educators "are ignorant of the really vital problems of human interests, a knowledge of which goes to make the truly educated man." (Or woman!) The truth about life—what has education (that congenital hypocrite, pandering so faithfully to the pursuers of profit and prestige) ever revealed concerning it? History is used as apologetics, as a device for spreading distorted propaganda. English is used as a medium for the egotistic inculcation of race pride. Economics is employed as a powerful prop of the reactionary *status quo.* The educational system of our land is nothing more than the advertising and secretarial departments of Big Business. All the vital subjects of youthful inquiry and concern are perverted to the chauvinist uses of an upper class educational bureaucracy. And the truth about life—what has our education done to it?

Every honest fellow knows that no sooner out of school than he has to unlearn the lies and half truths and pseudo truths and disingenuous little truths plastered over his uncritical mentality in the days of his credulity. As we reflect upon the tragic miscarriage of education, we can the better apprehend the nature and quality of the humanist task confronting us if we recall the wise observation of Dr. Ernest Jones, illuminating expositor of psychoanalysis: "We are beginning to see man not as the smooth, selfacting agent he pretends to be, but as he really is—a creature only dimly conscious of the various influences that mold his thought and action *and blindly resisting with all the means at his command the forces that are making for a higher and fuller consciousness.*" (My italics.)

In the light of the new psychology and under the guidance of the new philosophy of education, the query becomes increasingly pertinent: How much realism is the modern classroom capable of?

Practical Therapeutics

TREATMENT OF ENDARTERITIS OBLITERANS SYPHILITICA WITH INTRAVENOUS INJECTION OF COMMINUTED MERCURY

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STATUS OF ENDARTERITIS

Endarteritis obliterans has received scant attention in American medical literature. This disease has long been a *bête noire* to practitioners and is generally conceded to be refractory and intractable to treatment in the extreme. It is probable that the comparative rarity of the disease, coupled with the general impression of its inevitably bad prognosis, has deterred investigators from attempting to solve its complexities.

The French (1) have long recognized the rôle of syphilis in the etiology of endarteritis obliterans, but for some reason that is not apparent no one seems to have given it much study since the development of the Wassermann reaction has simplified the detection of syphilis. From the results published herewith a thoroughgoing investigation of endarteritis obliterans is indicated, such investigation being guided by the probability that the disease takes its origin from a luetic taint.

DIFFERENTIAL DIAGNOSIS

Much confusion has taken place in differentiating between endarteritis obliterans, Weir Mitchell's erythromelalgia, Raynaud's disease and thromboangiitis obliterans or Buerger's disease. True endarteritis obliterans, as described in this case, has been defined as possessing the essential characteristic of "a progressive thickening of the tunica intima without atheromatous degeneration" (2).

An excellent historical account of the disease, together with several interesting case reports, has been given by Eising (3) and need not be recapitulated here. Unfortunately, his work was done before the development of the Wassermann reaction and the probable luetic origin of the cases he describes was not confirmed.

INCIDENCE

An interesting fact mentioned by a number of writers (4, 5, 6) is that Russian Jews seem to be preponderately affected by endarteritis obliterans, Raynaud's disease and Buerger's disease. On account of the frequency of neuroses among this class of patients, they possess a high susceptibility to neurosyphilis, and endarteritis obliterans syphilitica should therefore be considered as being a manifestation of neurosyphilis as well as a vascular form of lues. In fact, the progress of endarteritis obliterans in affected individuals may be exacerbated by a vasoconstrictor manifestation of neurosyphilis that accelerates the closure of the arteries from their thickened intima. This hypothesis is suggested by the following case:

CASE.—C. F., male, aged fifty-one, photographer, came to me on February 18th. I diagnosed the case as endarteritis obliterans and sent the patient to the Cornell Clinic for confirmation. Their reply confirmed my diagnosis of endarteritis obliterans of luetic origin, especially of the legs, and they advised immediate removal of both legs. However, there was no gangrenous condition, only a simple blanching of the tissues due to lack of circulation and the severe pain, and I decided to postpone amputation. Spinal fluid Wassermann was four plus; blood Wassermann negative.

This decision was reached, not only on account of the condition of the patient's limb just described, but also because his spinal fluid Wassermann was found to be four plus, although his blood Wassermann was negative. This apparently anomalous condition was due to the fact that the patient had for a long time previously been treated for syphilis by other physicians, with mixed arsenic and mercury therapy, bringing about the situation frequently encountered in neurosyphilis whereby the blood quite readily reaches a negative Wassermann reaction during antiluetic therapy, while the spinal fluid remains consistently positive, due to the extreme limitations in the ability of ordinary mercurials in general and arsenicals in particular to penetrate into nerve tissue.

TREATMENT

I felt that further antiluetic treatment according to the classical procedure could only produce further ineffective results. I had recently been experimenting with a new form of finely divided mercury, that made a strong appeal to me because it is produced in a physical form similar to microorganisms and when intravenously injected into the body, is apparently subjected in the blood stream to the same physical forces in the body that regulate the passage of microorganisms into the invaded tissues. Considering endarteritis obliterans syphilitica to be largely a manifestation of neurosyphilis I decided that if any disinfection could possibly take place in the central nervous system, it could be accomplished in this medication, because in two previous cases of neurosyphilis I had obtained striking therapeutic results.

I started on February 20th to treat the patient with this comminuted mercury, employing the massive doses of mercury which are rendered safe by this form of the drug.

SYMPTOMS

The patient was suffering from severe pains in the left leg from foot to knee, principally in the foot; pains also in right foot. Patient was unable to sleep in a recumbent position; was obliged to sit in a chair with frequent change of position of the left foot. He was emaciated, constipated, and had no appetite. He had been treated by a number of specialists for an extended period for other conditions, such as pesplanus and suffered intolerable pains in the left leg which required the administration of opiates constantly. He was continually begging to have the leg removed.

COURSE OF TREATMENT

I began treating the patient with mercodel, giving him forty c. c. of the fifty c. c. dilution on February 20th, 24th and 28th, with the result that there was relief from all pain, and narcotics were withdrawn. It was very difficult to locate the veins in order to give intravenous injections, as they were small and hard to find, and the blood was thick and easily clogged the needle. During the month of March the treatments were continued, forty c. c. of the fifty c. c. dilution being administered on the 10th, 14th, 28th, and 29th. About March 20th two large ulcers developed, one on the scalp and one on the lip. These began as typical gumma and broke down in about eight days, discharging pus profusely. There was marked improvement of all symptoms following this reaction, and the veins became more prominent and easy to find.

On April 4th, forty c. c. of the fifty c. c. dilution were injected, and on April 8th, fifty c. c. On May 20th, the spinal fluid and blood Wassermann reactions were found negative.

By the first of June the patient was able to sleep well all night in bed, his appetite was good; and the treatment was continued with remarkable improvement in all symptoms. Forty c. c. of the fifty c. c. dilution of mercodel were injected on the following dates: June 1st, 9th, and 18th; July 2nd, 18th, and 27th; August 2nd and 8th. On August 15th a gangrenous condition of the lower part of the left foot set in suddenly, and it was considered advisable to remove the left leg below the knee, which was done on August 22nd.

At the end of three weeks the patient was considerably improved and went home. Spinal fluid and blood Wassermann reactions were returned as negative on September 18th, and on September 28th the patient went back to work.

CONCLUSIONS

All cases of endarteritis obliterans should be invariably investigated for a syphilitic background, as the blood Wassermann may be negative with a four plus spinal fluid in such cases. Hence the spinal fluid Wassermann is imperative.

Endarteritis obliterans syphilitica is probably a combination of neurosyphilis and vascular syphilis. A prolonged and heavy mercury medication is indicated, as the slowly progressive character of the disease may be completely inhibited by this treatment.

Endarteritis obliterans should be considered by practitioners in the light of these facts.

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ARSENICAL TREATMENT OF GENERAL PARALYSIS

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Dr. Georges Richert, of the Faculty of Medicine of Nancy, has recently studied the treatment of general paralysis with the arsenical compounds in a most complete manner. Since the results of his researches have not appeared in the medical press, I give them here at first hand. In the present state of our knowledge in respect to the pathological histology of general paralysis, this process should be regarded as the most serious late accident of syphilitic infection, hence it should be treated by the most energetic means at our disposal, namely, the arsenical compounds, especially arsenobenzol and novarsenobenzol.

Although mercury is useful as a sustaining therapeutic measure, and although when properly managed it may be quite as potent as arsenobenzol in secondary or tertiary manifestations, its use for reaching and acting upon nervous lesions engendered by general paralysis would require such large doses that the entire organism would be poisoned. Therefore, some form of arsenic must be employed in sufficiently large doses to improve the general condition without causing cachexia.

Old and diffused cases of syphilis, such as tabes and general paralysis, offer great resistance to specific treatment and Richert believes that it is logical to admit that a variety of a neurotrope treponema exists which is insensible to treatment. The difficulty in the action of treatment is due to the localization of the virus in the nervous tissue in which the organism finds new means of resistance, namely, the peculiar structure of the nervous system and the numerous chemical compounds, such as the lipoids and phosphoric fats that the treponema utilizes as a means of defence.

Arsenical treatment of general paralysis should be undertaken in the very earliest phase of the disease, hence the necessity of early detection of prodromal symptoms and serological examination, especially of the cerebrospinal fluid. Not only should treatment be begun early, but should be intensive and prolonged in order to avoid the frequent neurorecidivism. Richert recommends a series of from eight to twelve injections varying between 0.30 and 0.90 centigrams each. The periods of rest should be very short, from three weeks to a month at the most, because numerous cases show not only the inefficacy but also the therapeutic danger of small doses or long interruptions of treatment when large doses have been given. Richert believes that intraspinal injections of neosalvarsan are not only useless but dangerous, while the relative meningeal impermeability does not appear to him to be a contraindication to intravenous injections. The latter permits the drug to act in association with the humoral processes that it provokes throughout the organism.

Regardless of energetic treatment, general paralysis still remains the most serious and stubborn complications of syphilis, but the more energetic the treatment, the greater are the chances that general paralysis will not develop later on. It is easier to prevent the advent of general paralysis than to cure it.

PRESENT STATUS OF BLOOD TRANSFUSION

*With Description of a New Needle Apparatus**

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Since the transfusion of blood from one individual to another has become popular during the past seven or eight years, through the simplification of a complicated technic, it is interesting to review briefly this procedure from a historical viewpoint. Although accounts are found in medieval writings recording the transference of blood from man to man and from animals to man, as, for example, several versions of attempts made to transfer blood to Pope Innocent VIII in 1492, yet until the discovery of the circulation by Harvey, in 1616, none of the attempts were made on a rational basis. Soon after Harvey's discovery Francesco Folli, an Italian physician, and Daniel, of Leipzig, are reported to have made transfusions. Then followed Lower, who anastomosed veins of animals in 1665 and animal blood was transmitted to man by Denys, King in England, Immerets in France, and Rive and Manfredi in Italy. The deaths were so uniform after these crude attempts that the law interdicted the practice and it practically fell into disuse for over a century. Transfusion of blood, at least experimentally, was again revived in the early part of the nineteenth century but little practical application was made of it until about the last third.

In 1855, Bischoff introduced the idea of injecting defibrinated blood and this method became popular with Prevost, Parnum, Diefenbach, Brown-Séquard, and others. The results obtained with this rather clumsy technic were either bad or indifferent, and Kocher (1877), as well as Landvis and Gesselius, preached against it. Higginson and Aveling used two cannulas attached by tubing in a bulb syringe and Landvis, in 1875, transfused directly from vein to vein, employing cannulas and tubing. Then followed attempts at inhibiting blood coagulation by phosphate of soda, practised by Baexton, Hicks, and minute quantities of ammonia (Richardson).

Then followed the era of direct anastomosis of vessels with its long and tedious technic as a result of great strides in bloodvessel surgery, notably by the work of Murphy in 1897, and Doerfler, Carrel, Guthrie, Crile and others. The first permanent suture of bloodvessels was made made by Eck, a Russian, in 1879. In 1909, Brewer and Leggett advocated transfusion by paraffin coated glass tubes interpolated between artery and vein. Modifications of the Crile cannula were devised by Berger, Soresi, Janeway, McGrath and others. Curtis and David used a paraffin coated glass bulb as a receptacle, then injected with a syringe, using a rubber tube. This method did not sacrifice any artery. It was modified by Brown and Kimpton, Percy, Satterlee and Hooker. Error in the paraffin-coating meant failure.

These direct methods were in themselves frequently unsuccessful, and the dangers to both donor and recipient, because of the inability to measure the quantity of blood which streamed from one into the other, was great. Sometimes the successes were brilliant, the recipient was benefited and the donor survived, but the risk was so great that blood transfusion in the early days of this century was regarded, not only with fear and trepidation, but the procedure was considered unsuited for emergencies. If it is recalled that until Landstiner's work, in 1901, little was known of blood incompatibility, this danger alone in transfusion should be borne in mind as a cause for many a failure.

Then since 1914 Lindemann, Hustin, Agate, Weil, Lewisohn, Rueck and others so simplified the technic of transfusion that this measure has now been added to our therapeutic armamentarium as a routine procedure, and today indirect blood transfusion is almost universally practised. It consists of two different general types of technic: a, the addition of anticoagulants, for example, sodium citrate to the donor's blood after it is withdrawn and the introduction of this blood into the recipient; b, the transference of whole unmodified blood from donor to recipient, a method not so popular as the first but far superior to it; first, because in the citrate method, exposure of the blood to the air so alters its physical make up —for example, reaction—that disturbances follow its injection into the recipient. Then the addition of the anticoagulant undoubtedly influences the structure of the blood itself, as evidenced by disturbance of blood platelets and the change in tonicity of the red blood cells and probably other unidentified mutations that are beyond our visualization through the microscope, the result being generalized reactions in a great percentage of recipients, frequently leading to fatalities, such as loss of complement.

Bertram Bernheim recently estimated that with citrate transfusion reactions of greater or less severity will occur in as high as forty per cent. His confessions, at a recent meeting of the American Medical Association, are certainly worthy of consideration. Although an enthusiastic advocate of citrate transfusion for years, he himself has almost done away with it and uses it practically only in such circumstances as war surgery and where the donor, of necessity, cannot be brought in contact with the recipient, or in rural communities, where a competent operator is lacking and the emergency is great.

Citrate transfusion requires less skill than whole blood, and is therefore more popular today. It is placed, in many instances, in the charge of a young resident physician, the procedure being too menial for the surgeon. However, whole blood can be transferred from donor to recipient with ease and rapidity if one but takes the time to practise the procedure until he becomes competent. With whole blood one encounters few reactions, and these never dangerous.

On the whole blood method, as I practise it, the technic is simple. It consists of the introduction of a needle apparatus into both donor and recipient, and the transference of the blood by means of large Luer syringes so that 1500 or more c.c. of blood can be transfused within less than ten minutes. The

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blood never comes in contact with the air. It is transferred in its natural state, the quantity carefully measured and regulated by reactions of both donor and recipient. There is little donor's blood wasted and it is rarely necessary to cut down on veins. I was always wont to place citrate transfusion as an intermediary between ordinary saline infusions and whole blood transfusion, but I honestly feel that I cannot classify it in this position as I personally prefer the saline injection to citrate transfusion.

INDICATIONS FOR TRANSFUSION

Transfusion is indicated in all pathological conditions where alteration in either quantity or quality of blood is such that it does not fulfill its physiological functions, and I have found it of great therapeutic value, and sometimes a lifesaving measure, in the following conditions:

1. The anemias: primary anemias, such as pernicious anemia, leucemia (in these types of anemia it is frequently advisable to precede it with arsphenamine); hemophilia, purpura, anemias of unknown origin probably due to endocrine or other disturbances (evidenced frequently in the anemias in children), and the anemia due to acute hemorrhage, such as that resulting from gastrointestinal lesions, ectopic gestation, postoperative hemorrhage, and in the newborn; the anemia due to infections; and the anemia due to metabolic disturbances of long standing, as, for example, diabetes, nephritis, etc.; as a measure in the anemias during convalescence after operation and diseases of long duration, for example, typhoid fever, etc. It lessens the preoperative danger.

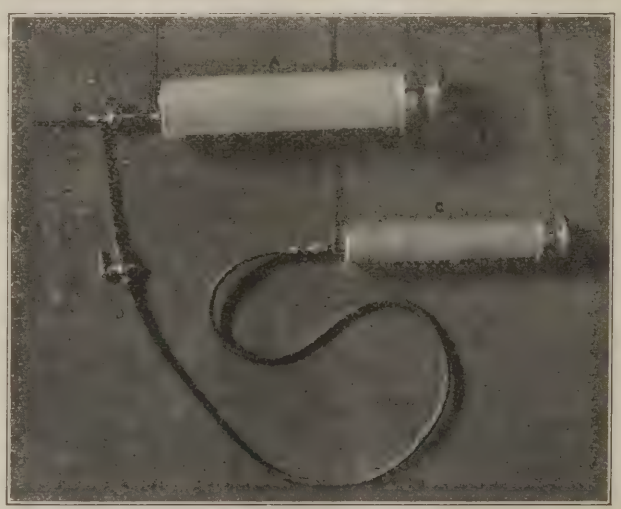

Fig. 1.—Transfusion apparatus. A, 50 c.c. Luer syringe; B, needle apparatus made in three sizes; C, small syringe made from saline; D, rubber tube for feeding saline to wash needle.

2. Transfusion as a remedy to combat infection during the course of bacteremias, as for example, typhoid fever, endocarditis, postpartum sepsis, etc., and in this class of cases frequently better results are obtained by the combination of transfusion with immune serum or the immunization of the donor with a patient's specific organism previous to transfusion.

3. Transfusion to combat toxemias, as, for example, ingested poisons, such as bichloride of mercury, poison by gases, the nausea and toxemia of pregnancy, and also in the various types of jaundice.

The amount of blood transfused will depend, of course, on the age and weight of an individual. In children less than two years of age no more than 150 c.c. of blood should be transfused; in adults anywhere from 300 to 1500 c.c. are usually given, depending upon the reaction of the recipient to the infused blood. As a general rule, patients with intravascular lesions, endocarditis, etc., should receive smaller transfusions, and patients, in whom the duration of the anemia has been of long standing with consequent degenerative changes, should receive smaller and more frequently repeated doses rather than large ones, as, in our zeal to transfer as much blood as possible, one must not disregard the danger of overloading a system that for a long while has gradually accommodated itself to a smaller quantity of fluid.

DANGERS TO BE AVOIDED IN PROSPECTIVE TRANSFUSION

1. *Compatibility of blood of donor and recipient.*—Since Landstiner in 1901 proved conclusively that agglutination of red blood cells by contact with blood serum derived from another individual of the same species occurs very frequently, his observations have been confirmed by later workers, and human blood has since been divided into four general groups; the classifications by Jansky and Moss are considered the most practical. It has been found that human blood has two different isoagglutinins. These have been designated by the capital letters A and B. The elements which are agglutinable are resident in the corpuscles and have been identified by the small letters a and b. It is self-evident that a blood cannot contain agglutinin A or B and its correspondent agglutinable substance a or b, as this would lead to agglutination of the blood corpuscles by its own plasma. However, there are four different combinations of these elements which are possible and which are shown to exist in the blood.

During embryonic development and during the first three months of life the human being does not possess specific agglutinative power in the blood. This knowledge is important, because any donor will be safe for transfusion purposes up to that period of life. After that, individuals fall into one of the four groups, which group peculiarity remains permanently throughout the life of the individual. I have found the grouping of blood according to Jansky the most practical, although the Moss classification differs from Jansky's merely in the placing of the most common group. Group 1 in Jansky's is group 4 in Moss's classification.

While it is a great convenience and also very necessary to group prospective donors so that their bloods can be matched with the recipient at any future time, it must be borne in mind that, although human bloods have been carefully classified, occasionally reactions develop due to unknown antagonisms between the matched bloods that are beyond our present recognition. These are probably minor

gglutinins that may be present in unknown quantities, even though the bloods be matched carefully. It is, therefore, very desirable that the bloods of the prospective donor and the recipient be brought into contact immediately before transfusion, so that an estimation can be made concerning the compatibility of the two bloods, and this is accomplished very simply by the test advocated by Roux and Turner.

2. *Transference of infection from donor to recipient.*—Unless the emergency is very great, the donor should always be carefully examined physically and from a laboratory viewpoint in order to determine whether he has any transmittable disease. During the course of transfusion, a sphygmomanometer should be attached to the donor so that frequent estimations of his pressure can be made. I have found that as long as the pulse pressure is maintained, the drop in systolic pressure may be very large without inducing danger to the donor. The donor is also carefully observed and watched for marked increased pulmonary rate, as indicated by yawning, sighing, etc.

The blood must be introduced into the recipient slowly and cautiously at first, as sometimes, in spite of all precautions, the patient will evidence antagonism to the donor's blood and that is usually manifest in a variety of symptoms; for example, cardiac consciousness (palpitation), precordial distress, backache, a short, sharp, repeated cough, and even pulmonary edema.

It is sometimes necessary, therefore, to stop immediately the transfusion, although less than one hundred c.c. of blood has been introduced into an adult; and although we have met such instances rarely, I would particularly emphasize the importance of regulating the dose administered to a patient according to reactions. After the first few hundred c. of blood have been transferred to the patient without any marked reaction, it is my experience that the patient will stand larger quantities well temporarily and it is very important, therefore, as mentioned previously, that the condition of the patient, previous to operation, be taken into consideration as far as total quantity of fluid transfused is concerned. As a general rule, when in doubt, it is much better to give an average transfusion, say 700 to 900 c.c. of blood, than to overload.

Following the transfusion, the donor should be kept quiet for at least six hours, given water and liquid diet, and occasionally stimulation; for example, adrenalin to overcome the acute depression. The recipient should be watched carefully and the urine examined for hemoglobinuria for at least twenty-four hours after the operation. Very frequently a secondary reaction may set in several hours following the operation, in which there occur chills and symptoms of impending collapse. It is always well, therefore, to have a syringeful of adrenalin (fifteen to twenty mm.) in readiness because we have found it almost specific in overcoming this complication.

REPETITION OF THE OPERATION.

This is usually necessary in the chronic blood dyscrasias. We have noticed, for example, that cases of profound anemia have very often by repeated transfusion been brought to a higher blood level and stay there. Sometimes in the anemias, especially in the aplastic types, it is well to repeat frequently small transfusions with the hope of stimulating the blood making organs. The intervals between transfusions must be decided according to the individual cases. Repeated transfusions are often practised as preoperative and postoperative measures, or where, on account of the patient's physical condition, smaller amounts of blood must be given, of necessity, at one time.

TECHNIC OF THE OPERATION

In the past, I have repeatedly tried the various instruments advocated for whole blood transfusion, such as the Unger, and I find that their lack of popularity is probably due to complications in their mechanisms, which account for frequent failures and also the danger of transmitting infection to donors. I, therefore, felt that the simplest possible technic evolved would produce more uniformly successful results, and have therefore devised the following simple needle apparatus. The body of the apparatus consists of a needle so modified that it fits directly the glass tip of a Luer syringe without the usual intermediate metal cap, so as to minimize the possibilities of coagulation. At the end of the shank is a simple stop cock to prevent blood loss. From the needle proper a small tube emerges which is connected with a rubber tube to a small Luer syringe filled with saline so that, during the operation, blood coagulation in the needle is absolutely prevented by the ability of the operator to flush the needle with saline at will.

The needle is inserted into the vein of the donor and the recipient. Usually arm veins are used in both adults and children, and although I have transfused ten day old infants through the arm, the easier route in the patients is through the superior longitudinal sinus. The blood is transferred through large Luer syringes. The empty syringes are carefully washed in a series of four basins of saline. I may emphasize the important fact that team work in carrying out this procedure is very essential for rapidity of action, especially when large quantities are to be transfused. I have performed over six hundred operations successfully by this method. I would therefore briefly summarize the present status of blood transfusion.

1. That the unsafe procedure of blood transfusion of a few years ago has developed, due to our increased knowledge of blood compatibility and simplification of blood technic, into the safe procedure of today.

2. That indirect whole blood transfusion is the method of choice; that the citrate method of transfusion, although simple, is indicated in such limited instances that it may be almost abandoned.

3. The apparatus used should be the simplest possible and therefore the one described is found uniformly successful.

4. As a therapeutic measure, transfusion ranks high, not only in the saving of life, but from the viewpoint of economy, in the marked reduction of the period of convalescence.

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Historical Medicine

The Golden Epistle

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Near the south end of the Island of Euboea was the town of Carystus of little consequence in other respects, but the birthplace of a physician of great fame—fame wholly justified by his learning and success, Diocles Carystius (the Carystian).

It is not known where and by whom Diocles was educated, but he was of the Dogmatic and not the Hippocratic School. The Dogmatics based their medicine upon *a priori* considerations, not like the Hippocratics, upon observation: they were idealistic and not materialistic; like the German philosopher who evolved the camel from his own consciousness, they evolved the causes, the nature and the proper treatment of disease by mental speculation, not by clinical experience.

Diocles was a Pythagorean, at least in the doctrine of numbers; but he had a fund of common sense which stood him in good stead in his medical practice, and gave him a high reputation for skill. A voluminous writer, he treated of fevers, materia medica, dietetics, anatomy and other medical subjects —fragments of his works are still extant. The longest of these fragments is the celebrated *Epistole Prophulaktike* or Letter on Preserving Health: this purports to be written to Antigonus, King of Asia; and, if it is genuine, was probably addressed to Antigonus Gonatas, King of Macedonia, who died 239 B. C., aged eighty, after a reign of forty-four years.

This *Golden Epistle* (as it came to be called) was frequently republished in the original Greek and in Latin translation—the celebrated Paulus Aegineta (A. D. 625-690) was especially enamored of it.

The well known French litterateur, physician and astrologer, Antonius Mizaldus (Antoine Mizauld), about the middle of the 16th Century, made a new translation into Latin which he published at Paris in 1555 in his octavo *Harmonia Coelestium et Humanorum*: this was deservedly adopted as the standard rendering, and has been frequently republished.

Amongst others, Joannes Curio made use of it, printing it in his edition of the *Flos vel Lilium Sanitatis* of the School of Salerno, a textbook of hygiene and other matters, in Latin verse which enjoyed the most unbounded popularity in the latter part of the 16th, all the 17th and nearly all of the 18th Centuries —the first edition appeared 1582, and there were many subsequent—my own copy was published by Stoer at Geneva, 1638.

From its interest historically, I give an English translation of Mizauld's Latin Version of the Golden Epistle.

> The Golden Epistle of Diocles Carystius, the Physician, second in point of time and fame to Hippocrates, to Antigonus, King of Asia, Concerning the premonitory symptoms of diseases and remedies to be applied at once—rendered from the Greek into Latin by Antonius Mizaldus.

(The Epistle begins by addressing Antigonus a the most erudite of Kings, who has no ordina knowledge of all philosophy who would not disda to receive the author's precepts with open arms ar observe them to the letter. Then it proceeds):

We have divided the human body into four part Caput, Thorax, Venter, Vesica.

CAPUT (THE HEAD)

When any disease is about to attack the head, ce tain presages and signs are for the most part accu tomed to indicate it. A heaviness of every part the head to the eyebrows, a murmuring sound in t ears, and a pulsation in the temples. In the morni the eyes water and are dim; the sense of smell deadened and the gums swell. So when you obser any of these presages and symptoms, make up yo mind that the head must be purged forthwith— mean not with the help of drugs, but taking the to of hyssop or origanum and boiling in a little pot wi raisin wine or ten ounces of soup with which y thoroughly rinse the mouth fasting; and inasmu as the phlegm is to be brought out, you will garg This is an easy remedy for diseases of the head.

It will also be very wholesome to wash the mou fasting with a decoction of mustard macerated sweetened and hot water, and at the same time draw out humor from the head by gargling; t head should, in advance, be gently rubbed, and t skin warmed, so that, the obstacle being removed, t phlegm liquefied may flow the better.

Whoever neglects the premonitory symptoms a prescribed remedies may of a certainty know th he is liable to these diseases—I mean, ophthalm glaucoma, pains of the ears, struma in the neck, di ease of the brain, sphacelismus, coryza, hoarsene nocturnal pains, lapsus vulvae, falling of the ha ulcers of the head and toothache.

THORAX (THE CHEST)

When the thorax is about to suffer from any di ease, this is presaged and preindicated by these sym toms—a certain perspiration flows from all the bod most of all at the region of the thorax; the tong swells, the saliva is salty, bitter or bilious; sponta eous pains appear in sides and shoulders beyo manifest cause; frequent yawning occurs; insomn attacks; suffocation oppresses; thirst is present; a after sleep, fatigue and anxiety; constriction of t chest, lassitude of the arms, a tremulous affecti of the hands. Such a condition it is well to assist this way—vomitus is to be produced not the crap lous kind from a banquet or that effected by a dru The best vomitus is in the morning fasting befo eating, and is that called by the Greeks, *surmaismos*

*"Surmaismos" is found in Hippocrates; the word is derived fr "surmaia" literally a radish but applied to an emetic used by Egyptians (see *Herodotus, ii,* 88) made of the juice of the radish a salt water. The word is found in Aristophanes, Pax. 1254. proverbial expression ran blepein surmaian, literally to look radi i.e., to look like vomiting.

Those, then, who wish to vomit in this manner should eat small roots or radishes, nasturtium, eruca, mustard or portulaca, then at once drink copiously of tepid water.

Those who neglect these symptoms and remedies may fear these affections: pleuritis, peripneumonia, melancholia, acute fevers, phrenitis, veternum, heat of the fauces with hiccough, and phlegmon.

VENTER (ABDOMEN)

If any disease is about to attack the venter, it may be detected by these indicia. The venter is loosened, it murmurs and is perturbed; food and drink have a bitter taste, there is heaviness of the knees, stiff rigor of spine and lumbar regions, with lassitude of the whole body beyond manifest cause.

When you observe these symptoms, the venter is to be softened and lubricated. It is better and far safer to make use of those medicines by which it will not easily be injured. In that class are beets, boiled in sweetened water, garlic thoroughly boiled; malva; sumex mercurials and every preparation of honey; for all these clear the bowels gently and satisfactorily. If any of these premonitory symptoms continue to increase, administer freely liquor of cnicus or cardamum the whole decocted, for that is gentler and safer. Smooth cabbage will also be useful thoroughly boiled in much water—this soup taken in five ounce doses with honey and salt will be very helpful. In the same way, a decoction of peas taken to the same amount as a drink has the same effect.

Those who pay little attention to these symptoms and remedies are wont to be attacked by the following diseases,—diarrhea, dysentery, lienteria, volvulus, coxalgia or ischias, tertian fever, gout, apoplexy, hemorrhoids and pain in the joints.

VESICA (BLADDER)

When any disease of the bladder is imminent it is to be recognized by these symptoms.

After a little food there is a feeling of repletion; flatus, and inflations arise, eructation and pallor of the whole body—the sleep is heavy, the urine scanty, aqueous and voided with very great difficulty; sometimes there appear buboes on the pudenda.

When such symptoms show themselves, it is high time to apply remedies. With perfect safety may be taken the roots of poppy or fennel macerated and decocted in white, thin, odorous wine—about two glasses or three ounces of this soup are to be administered per day, that is morning and evening with water of daucus, smirnium or elecampane, whichever is at hand—for they are all equally advantageous. If the patient drink water of peas macerated and boiled, along with wine, the same good result will follow.

He who unwisely neglects the above written symptoms may expect the following diseases: Hydrops, tumor of the spleen, pain in the liver, lithiasis, nephritis, strangury, colic pains, and tormina. In all the symptoms and diseases we have described, the medicines for children should be milder than for those of greater age.

Moreover inasmuch as certain diseases are more prevalent at fixed seasons of the year and certain foods are to be avoided, I add a little here beginning with the Winter Solstice.

SOLSTITVM HYEMALE (WINTER SOLSTICE)

Winter Solstice to the Vernal Equinox increases in human beings, distillations and humidities; and consequently, it is then advantageous to use the softer foods and to drink more sparingly more acid and made from origanum—and venery should be avoided—there are days, ninety in number to the Equinox.

AEQVINOCTIVM VERNVM (VERNAL EQUINOX)

This time of the year increases the black bile until the Autumnal Equinox: consequently use is to be made of cold water and everything odorous—venery is hurtful—it is safer, at least to apply what we have written about it. There are three and ninety days to the Autumnal Equinox.

AEQVINOCTVVM AVTVMNALE (AUTUMNAL EQUINOX)

This time of the year generally quantities of phlegm and thin defluxions until the setting of the Vergiliae.* It is proper, accordingly at this time to draw the humors from the head, to take the most succulent and acids foods, to produce vomitus seldom and to avoid concubitus. To the setting of the Vergiliae are numbered six and forty days.

VERGILARVM OCCASVS (SETTING OF THE VERGILIAE)

At this time the phlegm is in excess in human beings until the Winter Solstice; consequently it is proper to take what is as acid as possible and the sweetest wine, also for fat persons to use physical exercise. To the Winter Solstice there are five and forty days.

*I. e. the Pleiades.

Christian Science in the Time of Galen

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Recently in an attempt to get some comprehension of the ideas of the ancients as to the physiology and pathology of the kidney I found passages of other interest. In a book (1a) on the diseases of the kidney ascribed to Galen and admitted to Kühn's collection of his works these may be read. There are some reasons it seems to me why it may be ascribed to Lycus, the Macedonian, the pupil of Quintus. It is difficult, however, to believe that in the time of Marcus Aurelius and his immediate successors, that either Galen or Lycus or any one else should boldly admit, in a work on medicine, that he was a Christian. It was in the time of the early persecutions and Christians were being burned and thrown to the beasts in Asia Minor. In an article (2) two or three years ago I drew attention to those sayings of Galen

(1b) from which we infer he was not a Christian and it is not known that Lycus, the Macedonian, was one. Galen devotes a book to an acrid criticism of the works of the latter, but he does not charge him with being a Christian, which the author of this spurious but very able and attractive book in Kühn's Galen certainly was, on his own testimony.

Whoever the author may have been, after considerable discussion of the symptoms and therapy of kidney disease he goes on to say:

"When not only the causes alluded to, but also the idiosyncrasies of the temperament, contraindicate the treatment, the drugs do not harmonize with them, for they often fail. It is necessary, therefore, to keep watch and if the symptoms do not yield to the therapy, because of some peculiarity of temperament or some state of the disease, or whatever else it may be, one must change and pass over to things that are of advantage. This applies not only to drugs, but to all therapeutic measures and certain mysterious measures which do not belong to our art at all. If these are held in more regard than the others they are too near at hand and they hark back to the powers of nature. If the drugs of our art fall short because of some unknown and hidden exceptional thing, it is often necessary because of the urgency of the crisis to transfer our trust to the magic ones, the secret ways of the men of old and their whole sphere of action which has been constructed out of expert though irrational practice—like the burnt skin of a burrowing hare and goat's blood and other stupid mixtures. It is the more disgusting that the irrational experience has arisen out of nature, or from chance, or from a whim, or from mimicry, or from dreams, like a caveman, or from prophecies, or from some guess, or from something else out of which empiricism is constructed." It will be seen that this is a fairly complete analysis of the sources of primitive magic and that the caveman is a trope in its exposition, just as he is today.

"All these strange things are with us at home, but it is not necessary to put trust in them simply because we do not understand them. If from any necessity we resort to them we should not so use them lest, though they may aid us in an unknown way, they may also do injury in an unknown way." We see the worldly wisdom and professional caution of the author with a feeling of sympathy. Then he turns on us. "If the physician must practice according to rule he must make use of a bustling activity, speak confidently of functions and processes, as one acquainted through methodist doctrine with the power of the hot and cold, the dry and the moist, things sour, bitter, acrid and sweet, salty, biting and piercing, the volatile and the nonvolatile, describing the action of epispastics, the things which stop the pores and open them and all the rest of it in form." Is it possible that the family practitioner acted that way in the time of Galen? Have times changed and we with them? The toxins and the antitoxins, the vaccines and the vitamines and endocrines—but we have no time to linger over these things old and ever new. Life is short and the art long. "Why then should we Christians fail to make use of the things, which are the great mysteries for us? For I believe in these and I agree not alone bodily ills, which are matter of dispute with all physicians, are to be banished, but the diseases of the mind." If this is not an invitation to turn such cases over to the Christian Scientists and the "magical practice of the mysteries," it has no meaning.

Whether Galen ever was a Christian or not he never wrote that book. He was a bitter foe and a hard hitter, but he never turned with such biting irony, with such a sword, sharp pointed and double edged, on his own orthodox confrères.

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Contributors to the Science of Medicine

ELIE METCHNIKOFF

On the sixteenth day of May, 1845, in a rambling, dilapidated old house near the village of Pannasovka in Kharkoff, a part of the wild, barren steppe country of Little Russia, an unwelcome child was brought into the world. Money was scarce and there were already four children, so the parents had decided to have no more; nevertheless, the child's mother grew to love this little son more perhaps than any of her other children. The Mecznokows named the baby Elias, or, as we know him, Elie Metchnikoff. Ilia Ivanovitch, the father, was a kindhearted spendthrift, member of a well bred but far from brilliant family, and interested chiefly in food, horses, and cards. The mother was a famous Jewish beauty, with so great a charm of manner and personality that she was nicknamed *Milotchka*, charming. Elie grew up into a frail little boy with weak eyesight, so the doctor ordered that he was not to be allowed to weep or rub his eyes. Elie soon learned to profit by this prohibition, and, at the least hint of a refusal or reprimand, would begin to whine, rub his eyes, and announce that he was going to cry. Thus he was given his own way in everything, and became for a time a very spoiled and capricious child. In reality however, he was most affectionate and loving, and very sensitive to kindness, but equally so to injustice, as was illustrated by his refusal to include in his prayers an aunt who rather foolishly made a pet of his elder brother.

When little Elie was about six, the family decided to move to Kharkoff. Here, for the first time, Elie made the discovery that he and his family were not

he centre of the universe. For instance. The Metchnikoffs occupied an apartment over that of he landlord. One day, when the children in their play were making a dreadful uproar, a servant came up from the floor below, saying that the landlady was ill and begged that the children be quiet. Little Elie, in the midst of a game, was so furious at being nterrupted, that he seized a toy whistle and blew it as hard and loud as he could through a crack in the floor, and it took the combined efforts of the rest of the family to make him stop. In after years he remembered this incident and was very remorseful, insisting that it be included in his biography, which, he considered, should contain unflattering as well as favorable comment. He hated games because his nervousness kept him from the concentration necessary to winning, and to lose he considered a bitter disgrace. His lack of robustness made him unsuccessful in the outdoor sports of his older brothers, so he refused to take part in them. Thus, by a process of elimination, he gradually isolated himself from his surroundings, and took refuge in his mother's love, his own childish games, and his work with his tutor. The latter was an intelligent youth, who not only taught the children their lessons, but endeavored to inspire in them a real love of learning. Elie's first passion was botany, which led to an intense interest in all the natural sciences. Once, at the age of eleven, he fished for hydra so eagerly in a puddle that he fell in and was rescued only with great difficulty. The children's next tutors, a Frenchman, who confined his instruction to teaching them to sing chansons, and a German, whose favorite occupation in life was drinking beer, were so indifferent to lessons that Elie found it perfectly easy to omit all study except that having to do with natural history, which he carried on chiefly by himself, on the foundation built by the first tutor.

ELIE METCHNIKOFF

The second great passion of the boy's life was music, and the love of this art remained to the end one of the dominant characteristics of his personality. Since he could learn neither to sing, nor to play on any instrument, he made himself an expert whistler.

In spite of Elie's passion and real gift for natural science, his earliest efforts along this line were attended by misfortune. His first paper, written when he was sixteen, and sent for publication to the *Bulletin of the Moscow Society of Naturalists,* had to be frantically recalled because the boy discovered, through further researches, that its conclusions were erroneous. Having decided that the Russian universities were backward, he persuaded his family to let him go to Würzburg to study under the great scientist, Kölliker. Stopping over night at Leipzig, he found a room and rushed out to buy books. When he had collected as many as he could carry, he suddenly realized that he had not the least idea where the boarding house in which he had engaged his room was located. So most of the night was spent wandering about in search of it, with his arms full of his precious books. But worse was to follow. When the ardent student reached Würzburg, he discovered that vacation time was just beginning at the university, so all the faculty and students were out of town. Nevertheless, he resolved to wait until the next term opened, pursuing his studies alone meanwhile. After a series of what must have been to his sensitive nature almost insurmountable obstacles and heartbreaking experiences, he found a little room which he could afford, unpacked his bag, and settled down to work. But such a sea of loneliness and of hatred of his squalid surroundings at once engulfed him, that he packed up again, rushed downstairs, and told the old couple in charge of the boarding house that he was unable to stay. Followed by their loud complainings and abuse, he dashed from the door and so began his journey back to Russia.

Two years later, when he was eighteen, he published his first scientific article, a memoir on the vorticella. The next year, in spite of the extreme poverty in which he had to live, he managed to spend at the famous biological centre in Heligoland, when he met many of the greatest naturalists of his time. And so began his scientific career, culminating in his work as subdirector of the Pasteur Institute in Paris. Metchnikoff's greatest contribution to the science of medicine was his theory of phagocytosis. His extension of this theory into the field of prevention of senescence, chiefly through the agency of the Bacillus bulgaricus, is still in the controversial stage. He also did notable work in immunology in general and in syphilis in particular, his experiments with Roux on anthropoid apes in connection with the latter subject having been particularly significant.

The best account of Metchnikoff's work is probably the little book entitled *Histoire d'une idée,* written by his pupil, colleague and friend, Professor Besredka, of the Pasteur Institute. His second wife, Mme. Olga Metchnikoff, has published a charming and interesting account of his life.

The development of this complex and contradictory personality is ably outlined by his wife: "The mercurial, vivacious child, goodhearted, intelligent, and precocious; the young man, ardent, impetuous, passionate, a lover of science, and of all that was exalted; the mature man, a bold thinker, an indefatigable investigator, eager, generous, tender, and devoted; the old man, in everything faithful to himself, but progressing in serenity, shining with an ever softer light, like a mountain peak in the setting sun; the martyr at last, enduring suffering with patience and resignation, seeing the approach of death without fear, observing it as he had observed life."

Editorial Articles

ARE WE APPROACHING A NEW MEDICAL ERA?

Our symposium on endocrinology includes an article by Sajous which should be read with unusual care in view of its possible influence on the future of medicine as a whole. Most of our readers will doubtless learn with some degree of surprise that so fundamental a function as that of respiration and its corollary, tissue oxidation, still await a satisfactory explanation by physiologists even though studied by them over a century. Tissue oxidation taking an active part in all functions, normal and pathological, ignorance of its rôle in the tissues cannot but retard seriously the development of our knowledge of clinical medicine in all its phases and impair our therapeutic efficiency.

This dark picture is forcefully emphasized, however, only to demonstrate the urgency of seeking light in other directions. Such light is available, according to Sajous, when the adrenals, as he has held for many years, are accepted as the essential source of the agents through which both pulmonary respiration and tissue oxidation are sustained. These organs thus become as important as the heart, acting as the purveyors of the biochemical agents which sustain thermogenesis in all tissues. The adrenal cortex, also so far an unknown quantity to physiologists, takes part according to Sajous (who ascertained this fact but recently and publishes it in this issue for the first time) in the respiratory process, the phospholipoid lecithin being the active agent, while the adrenoxidase of the medulla acts as its oxidizing agent in the tissues.

It may be well to recall in this connection that Sajous's labors in endocrinology occupy a field of their own: that of studying both the rôle they play in all functions, and the manner in which they influence disease. He is not a partisan of the random use of organic products, now being broadly criticized, and holds that what merit they possess can only be placed on a sound foundation when the functions of the endocrines are known and their therapeutic use, therefore, be poised on rational lines.

An encouraging feature of Sajous's labors brought out by the many articles he has published in our columns, is that "they destroy nothing, but add much to, and elucidate, our store of knowledge." In his opinion, a mere fraction of our actual assets in established facts in all branches of medicine, are now being used to develop medicine, a fact he ascribes to the absence of endocrine factors. These biochemical agents he assimilates to the mortar which binds together the bricks of an edifice. Construed in this light, the endocrine glands may still prove to be the foundation of a new era in medicine in which all faithful workers will receive their due.

THE PITUITARY SYNDROMES

At the International Congress of Neurology the subject of the pituitary syndromes was thoroughly discussed. In this report, based on extensive experiments, controlled anatomically, I. Camus and Roussy showed that the hypophysis is not an indispensable organ for life, that its removal is not responsible for polyuria and glycosuria, that it does not directly govern the genital functions, and does not provoke the adiposogenital syndrome. Disturbances of this nature are in reality produced by a lesion at the base of the third ventricle, involving the tuber cinereum and proximal glandular masses.

These views were confirmed by clinical data obtained by Claude and Lhermitte. Souques, Bremer and Lereboullet agree to this conclusion, with certain reserves in relation to the part played by the hypophysis in the production of the adiposogenital syndrome and especially during growth—Souques' type of pituitary infantilism. Polyuria alone persisting after antisyphilitic treatment in a case of infundibulary syndrome, reported by Foix and Dauptain, showed that the disturbance was due to a deficit of a regulating centre, probably of the tuber.

From the clinical viewpoint, Froment offered a critical study of various syndromes dependent upon a lesion or disturbance of the pituitary region, including acromegalia, gigantism, and pituitary cachexia. Great prudence is to be exercised in admitting any secretory disturbance in their development. As Bailey points out, histological examination is not sufficient to determine the histological value of a ganglion, and the same may be said of the clinical effect of opotherapy, whose interpretation is a delicate matter. Given the results obtained from the injection of an extract of the posterior lobe of the hypophysis in a case of insipid diabetes, Souques and Lermoyez suspected that there was a medicamentous and not an opotherapeutic action of the preparation. At all events, extracts of the posterior lobe seem to act on the maintenance of the vascular tonus (Beco), on the excretion of water (Gilbert, Foix, Garnier, and others), but with results that did not agree. For that matter, the disturbance

bserved, likewise their variations, were frequently elated to pluriglandular changes.

Welter analyzed the ocular phenomena, lesions f the fundus, unequal pupils, oculomotor disturbnces, and exophthalmos, while de Larpersonne welt lengthily on changes of the field of vision—emianopsia.

The treatment was envisaged in three forms.)potherapy acted regularly, but temporarily, on inpid diabetes; it gave satisfactory results in some cases f the adiposogenital syndrome, but its action varied n acromegalia. Deep radiotherapy, with a frontoemporal application, was described by Beclère, who egarded it as the least dangerous and most efficaous treatment. Many others reported excellent esults. Cushing pleaded for surgical treatment, but is radical measures should be subjected to careful nd critical examination.

HYPOTHYROIDISM WITH OR WITHOUT MYXEDEMA

Hypothyroidism is responsible for almost as many nditions of ill health and symptoms as hyperthyidism. Hypotension more frequently accompanies ypothyroidism than hypertension, so much so ined that low blood pressure may be regarded as the ost prominent diagnostic sign of hypothyroidism.

In the *Boston Medical and Surgical Journal* for ebruary 21, 1924, a number dedicated to John reston Sutherland, dean emeritus of Boston Unirsity Medical School, and the original articles of hich were prepared by associates of Sutherland as tribute of respect and affection, is an article on rtain aspects of hypothyroidism by Charles H. awrence. The article is based on the study of enty-five cases of hypothyroidism, in which clinical nd laboratory investigations were made at the vans Memorial, Boston. The summary is as folws: 1. Twenty-five cases of hypothyroidism with nical and laboratory findings are presented and scussed. 2. The most important findings in the stories, physical examinations, and easily available boratory tests are emphasized. 3. The possible lation of the abnormal nitrogen metabolism to teriosclerosis and chronic nephritis is pointed out.

The existence of a nonmyxedemic type of hypoyroidism, possibly analagous to the Levi-Lorraine pe of pituitary insufficiency is reported with tabued findings in nine such cases.

It is pointed out that it appears that the most nstant symptoms of hypothyroidism, detectable by ysical examination are, in order: subnormal temrature, bradycardia, changes in the nutrition of the in, and obesity, but that the condition may exist without demonstrable nutritional changes in the skin, or in the presence of underweight. There have been but meagre accounts in medical literature of thin hypothyroid patients. They have been overlooked, although the investigations of Lawrence and his coworkers suggest that they are by no means uncommon. The blood and urinary findings of a typical case examined by these investigators were particularly interesting, and point to damage to the kidney. Under treatment the blood chemistry returned to normal, and the urinary abnormalities also evinced a similar reparative tendency. Therefore, there could be little if any organic pathology of the kidney present, and the relation was due to depressed function only. But in untreated cases, the persistence of nitrogen retention in the blood, and of abnormal partition of the endproducts of the protein metabolism in the urine, may well explain the early arteriosclerosis which according to Falta is often found in myxedema and which as Lawrence points out, may even be casual factors in the etiology of chronic nephritis.

A considerable amount of evidence goes to show that the deranged protein metabolism of unrecognized hypothyroidism and other endocrine hypofunctions may play some part in the etiology of chronic nephritis. Morover from a diagnostic point of view, certain findings of the Evans Memorial investigators are worthy of notice because of their availability in general practice. The prominence as a diagnostic feature of low blood pressure in hypothyroidism was emphasized. In fifteen out of the twenty-five cases investigated, the kidney function as determined by the phenolsulphonephthalein test was below normal, although the urine showed no definite signs of nephritis. The examination of the blood exhibited none of the characteristics of anemia, which in patients complaining of fatigue or exhaustion was therefore suggestive of thyroid failure, and the presence of lymphocytosis was further evidence of this condition.

As Lawrence says, it would seem that without making elaborate diagnostic tests, there are in the history, physical examination, and more or less simple laboratory tests, sufficient signs suggestive of the possibility of such a condition existing. Great proneness to fatigue without definite organic disease to account for it, coupled with diminished kidney function without nephritis, no anemia but with lymphocytosis, together with a slow pulse rate and subnormal temperature—all these diagnostic symptoms should lead to the suspicion that the thyroid or other endocrine glands were not working efficiently or harmoniously, and should give rise to investigations to discover if this were so. To

neurasthenia is now attributed perhaps most of the cases with the above described symptoms, and it might be well in order to treat more effectively, to find out before labeling the affection neurasthenia, whether it is due to a deficiency of the thyroid or of other endocrine glands. The most suggestive diagnostic sign to which Lawrence draws attention is the low blood pressue, which generally distinguishes hypothyroidism. Also, that there is a thin type of hypothyroid individual, and that obesity must not be looked upon as the most outstanding sign of the hypothyroid state. It would be of the utmost value to throw more light on the cause of hypothyroidism, whether hypothyroidism is the primary cause. The key to the successful treatment most probably is to be found in a thorough knowledge of the working of the endocrine glands and in its practical application. Although the goal is yet far off, satisfactory progress is being made.

EFFECTS OF TOBACCO

A committee with a large and imposing personnel has taken up the study of the effects of tobacco, and whether our annual outlay of $1,600,000,000 for the weed is worth the price.

The first piece of research published is that conducted by O'Shea of the University of Wisconsin. It is said to be a study of *Tobacco and Mental Efficiency*. The last paragraph of the explanatory note, or introduction, gives one a peculiar impression and, we fear, some prejudice. It says, "It should be borne in mind that the present investigation is concerned solely with the effects of smoking tobacco on the intellectual processes. No effort has been made to discuss the medical, physiological, esthetic, economic, industrial, or sociological aspects of the tobacco problem." We had hoped that anyone prominent in educational work and presumably posted in psychology would be aware that any study of "intellectual processes" is a study of physiological processes. The two are one. All the records made in this study are records of the physiological effects of tobacco.

The results of this study are chiefly a reiteration of what has long been known, that tobacco is bad for some people and apparently not harmful to others. There is a wide variability in persons and a wide variability of effects from day to day in one person. "Laboratory tests yield no answer to the question, Does tobacco strengthen or does it weaken creative ability?" (Whatever creative ability is.) From the socalled scientific laboratories the researchers fall back upon the laboratory of everyday life and find contradictory answers to this question:

"The laboratory data yield no answer to the question, Does tobacco improve or does it injure judgment?" Effects upon alertness vary though they are not marked on either side. "The general conclusion to be drawn from a study of the habits of men of the past and the testimonies of men and women of the present is that tobacco is not detrimental to the mental efficiency of some individuals, though it may be a detriment to others."

In regard to the immature, the conclusions are somewhat more definite, and on the side of the deleterious effect of tobacco. "It is a significant fact that in every one of the foregoing reports from schools, smokers are shown to be inferior to non-smokers in the work of school and college. Whether this inferiority is due to the direct effect of tobacco as a drug, or to other factors, or to all factors operating together, remains to be determined; but so far as these investigations reveal the facts regarding the rôle of tobacco in school and college, it is always associated with poor scholarship." Possibly in our age of compulsory education the boy who finds himself slow of learning takes to tobacco as a solace.

The great variability of effects shown by these experiments indicates, what might be anticipated, that human tissue reacts variously to the drug. Also the tissues of most smokers probably become so habituated that the effect is chiefly due to the sucking and puffing and the benefit derived is from having something to do rather than from any specific action of tobacco.

MEETING OF THE CONFERENCE BOARD OF PHYSICIANS IN INDUSTRY

A meeting to celebrate the tenth anniversary of the organization of the Conference Board of Physicians in Industry was held in New York City, April 4th to 5th, inclusive. This conference, which was organized in 1914, stands for cooperative effort in introducing into industrial establishments the most effective measures for the treatment of injuries of employees, for promoting sanitary working conditions, and for prevention of industrial diseases. One of the features of the conference was a series of clinics arranged by the Post-Graduate Medical School and Hospital at which the physicians attending the meeting were guests.

The general sentiment of the meeting was that medical work in industry is a necessity, demanded by the existing social order; that only practitioners with high ideals of service and an adequate grasp of the problems involved can be successful in this work; that it must be conducted on a high ethical plane and with strict regard to scientific considerations; and that, when so conducted, it is a potent factor in advancing the cause of preventive medicine, both in personal and community health.

PUBLIC HEALTH SUMMER SCHOOLS

Because of an extensive demand for summer work in public health education, the United States Public Health Service has announced that arrangements have been made with Columbia University and the universities of California, Michigan, and Iowa for courses to be given in public health work during the coming summer. These will cover a period of from six to eight weeks' study, and a wide range of subjects will be included, including laboratory work, clinical demonstrations, and other methods of instruction outside the classroom. The aim of these summer schools will be: 1, to provide up to date intensive training for all persons engaged in any kind of public health work; 2, to furnish up to date instruction which will enable practising physicians to deal effectively with the more important causes of mortality and disability, especially cases referred to industrial clinics, school clinics, public health nurses, etc.; 3, to bring together practising physicians, health officers, and other sanitarians, and thus to establish a more cooperative relationship in the work of disease prevention.

Among the specialists who will comprise the faculties of the various schools are Dr. Michael M. Davis, dispensary management; Dr. Robert H. Gault, criminal psychiatry; Dr. Emery Hayhurst, industrial hygiene; Dr. William J. Mayo, noncommunicable diseases; Dr. E. V. McCollum and Dr. H. C. Sherman, nutrition; Dr. William H. Park, laboratory methods; Dr. Earl B. Phelps and Dr. George C. Whipple, public Health engineering; Dr. M. J. Rosenau and Dr. Victor C. Vaughn, epidemiology; Dr. Thomas W. Salmon, psychotherapy; Dr. John H. Stokes, syphilis; Dr. Philip Van Ingen, child hygiene; Dr. C. E. A. Winslow, public health administration; and Dr. Francis Carter Wood, cancer.

NEW INDUSTRIAL DISEASE CLINIC

The New York State Department of Labor, the College of Physicians and Surgeons of New York, and the Reconstruction Hospital in New York City, working in collaboration, have opened a clinic especially equipped and adapted for the diagnosis and treatment of industrial diseases. This clinic is situated at the Reconstruction Hospital, corner of 100th Street and Central Park West. On the staff are authorities and specialists in the fields of x ray treatment, electrotherapy, hydrotherapy, phototherapy, massage, mechanotherapy and occupation therapy.

The need for such a clinic has long been recognized by the medical profession of New York, and the step is of the greatest significance, since it concerns not only the wage earner, the employer, and the individual practitioner, but society at large, as important to the well being and efficiency of the State as a whole.

In addition to its clinical duties, the clinic will make special studies of occupational disease and will publish the results of research in new methods of treatment. Special training in industrial medicine and surgery has been planned.

Information about the clinic may be obtained from the Director, Industrial Hygiene Clinic, 100th Street and Central Park West, New York City.

Obituary.

SIR WILLIAM MACEWEN, M.B., C.M., F.R.S.,

Glasgow, Scotland

One of the greatest surgeons of modern times, Sir William Macewen, passed away at his home in Glasgow on March 22d, last, at the age of seventy-six. To Macewen belongs the title of "father of brain surgery" more rightly than to another great pioneer in the field of brain surgery, Sir Victor Horsley, to whom it is often applied. Macewen was original in everything he undertook. He was a pioneer in brain surgery; he invented an operation for the cure of knock knee which has become classical; and his researches into the acute infective inflammation of bone revolutionized modern surgical method in this direction.

He took the degrees of M.B. and C.M. at the University of Glasgow in 1869, served as house surgeon at the Royal Infirmary, and took the degree of M.D. in 1872. Five years later he was elected surgeon to the Royal Infirmary and at once adopted the antiseptic treatment of wounds, accepting the principles of Lister, but modifying the details of the technic. It may be said that Macewen was a pupil of Lister, and not only carried on the high tradition of the master, but introduced modern aseptic surgery to overcome the limitations of the Listerian methods. In 1874, when Macewen began to practice, bacteriology as a science was unknown and the brain, so far as surgery was concerned, was an almost unexplored land. Knowledge of the brain was elementary. The investigations of Broca, Hughlings Jackson, Fritsch, Hilzig, and David Ferrier, especially of the last named in 1876, throw a great deal of light on the working of the brain. Macewen was quick to appreciate the practical value of these investigations and to apply them. In 1879 he opened the skull successfully for the relief of intracranial pressure.

In 1851 Macewen drew attention to the value of Listerian methods in the operation of trephining and brought that operation into vogue. Although for long he had to combat inertia, conservatism, tradition, and prejudice, his remarkable gifts and surgical achievements were recognized in time. The University of Glasgow conferred upon him the degree of LL.D. He was elected an F.R.S. and was made a Fellow of the Royal College of Surgeons in England and Ireland, and an honorary member of the Imperial Academy of Medicine of St. Petersburg, of the French and German surgical societies, and of medical societies in Hungary, Italy, and America. In 1892 he was appointed Regius Professor of Surgery at the University of Glasgow, and Surgeon to the Western Infirmary. He was president of the British Medical Association in 1922 and in 1923 he was president of the Societé Internationale de Chirurgie when it met in London.

His address to the meeting of the British Medical Association in 1922 was notable. In it he summarized admirably the revolutionary developments which had taken place in brain surgery and in which he himself had played a leading part. In this address, too, he pointed out that pioneers were generally re-

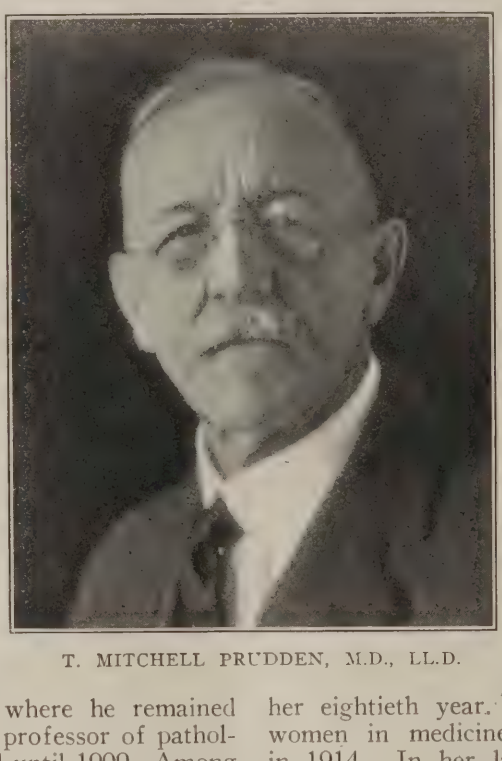
garded by their own generation somewhat lightly.

He was a keen naturalist, and his book on the antler of the deer was an important contribution to natural history and to the study of the bone growth. Macewen was a big man physically and mentally, with clear cut handsome features. He was also a man of strong opinions and had no hesitation in stating them with emphasis, and was somewhat impatient of contradiction or interference.

T. MITCHELL PRUDDEN, M.D., LL.D.

New York

Dr. T. Mitchell Prudden, one of the first members of the Board of Scientific Directors of the Rockefeller Institute for Medical Research, and member of the Council of Public Health of the New York State Health Department, died suddenly on April 10th, at his home, 160 West Fifty-ninth Street, New York. Dr. Prudden was born in 1849 in Middlebury, Conn. His parents were the Reverend George P. and Eliza A. Prudden, of that city. In 1872 he was graduated from the Sheffield Scientific School of Yale University, and two years later from the medical school of the same university. While a student in the medical school he also served as instructor in chemistry in the academic department. After receiving his medical degree, he took postgraduate courses in Berlin, Vienna, and Heidelberg, returning to this country in 1878 to become a member of the faculty of the College of Physicians and Surgeons of Columbia University. He held here the post of assistant in pathology and histology until 1882, when he was appointed director of the pathological and bacteriological laboratory, where he remained until 1892. He was then made professor of pathology, in which capacity he served until 1909. Among other teaching positions held by Dr. Prudden was that of lecturer on normal histology at Yale from 1880 until 1886. The university conferred upon him in 1896 the degree of LL.D.



T. MITCHELL PRUDDEN, M.D., LL.D.

In 1901, the date of incorporation of the Rockefeller Institute for Medical Research, Dr. Prudden was made a member of its board of scientific directors, an office which he retained until his death. In 1921, he was appointed to the International Health Board of the Rockefeller Foundation. He was a member of the New York State Public Health Board from 1914, when he was chosen for this post by Governor Glynn, until the time of his death.

Although Dr. Prudden was a specialist of the first order in his own fields of experimental pathology and bacteriology, he did not limit his interests to these subjects, as is shown by the fact that he was an active and interested member of many learned and scientific societies. Among these were the American Academy of Arts and Sciences, the National Academy of Sciences, and the American Anthropological Association. Among medical societies to which he belonged were the New York Academy of Medicine, the New York Pathological Society, the Association of American Physicians, and the Association of American Pathologists and Bacteriologists.

Dr. Prudden is best known as the man, who, with Dr. William Henry Welch, brought experimental pathology and bacteriology from the great laboratories of Germany, where the highest development of the nineteenth century in this line of research and experimental work was reached, to America. Welch established, in 1884, a laboratory at Johns Hopkins. Prudden, through his teaching at the College of Physicians and Surgeons and at Yale University and through his work with the Rockefeller Institute made a notable contribution to the development of these departments of medical science, particularly in their application to the principles of preventive medicine and hygiene. He was also the author of a number of articles on these subjects and several books, some of which are classic textbooks now used in the teaching of pathology.

As a teacher and lecturer Dr. Prudden was eminently successful, and was greatly beloved by his colleagues and students. Although *par excellence* the specialist and man of science, he was also the possessor of broad human understanding, the good comrade and warm friend.

ANN ELIZABETH CLARK, M.D. (Berne), M.R.C.P.I.

Birmingham, England

On February 25th last, Dr. Ann Elizabeth Clark died in her eightieth year. She was one of the pioneer women in medicine. She retired from practice in 1914. In her late twenties she joined Sophia Jex Blake, Agnes McClaren, and Edith Rechey at Edinburgh. She obtained a medical degree at Berne, Switzerland, in 1877, and in 1878 she obtained the licentiate of the Royal College of Physicians in Ireland. She then studied in Paris, Vienna, and Boston. Afterwards she went to Birmingham as resident medical officer to the Midland Hospital for Women, becoming the first woman on the honorary staff. Also for twenty years she was on the staff of the Birmingham's Children's Hospital.

Dr. Clark built up a large practice, chiefly among the poor. At the Women's Hospital she was associated with Dr. Lawson Tait. She refused to prescribe alcohol in any circumstances. Dr. Ann Clark and a few friends founded a home for cancer patients and when she retired from active work, some of her patients raised the sum of £750 to endow a bed at this home.

News Items

Hospital Bed Endowed.—The Progress Club, in commemoration of its sixtieth anniversary, has endowed a bed in the Hospital for Joint Diseases and one in Montefiore Hospital.

Benefit Dance.—The Eastern Medical Society of New York will give an entertainment and dance at the Waldorf on May 10th, to increase its Loan and Relief Fund, devoted to the assistance of physicians in need.

Harvard Loan Fund.—An anonymous loan fund of $2,000 to assist needy students in the school has been established at the Harvard Medical School in honor of President Emeritus Charles W. Eliot.

Endowment Fund.—A fund of $10,000 is being raised to endow a bed at the Manhattan Eye, Ear and Throat Hospital and Medical School in memory of the late Dr. T. Passmore Berens, who was professor of otology in the institution.

Course in Infant's Diseases.—A twelve day course for medical officers of welfare centres and others interested will be given by the Fellowship of Medicine and Post-Graduate Medical Association, London, at the Infant's Hospital, from May 12th to 24th.

Statue Unveiling.—Among the busts to be unveiled May 13th at the Hall of Fame of New York University, is one of Dr. W. T. G. Morton, discoverer of ether anesthesia. A tribute will be spoken by Dr. W. W. Keen, of Philadelphia.

Visit of Prominent Dutch Physician.—Dr. Alleta H. Jacobs, first woman physician of the Netherlands, who also opened the first birth control clinic in Holland, has arrived in this country as delegate to the Woman's International Congress for Peace.

Public Health Service Entrance Examinations.—Examinations will be held on July 7th in Washington, Chicago, San Francisco, and New Orleans, for appointments to the regular corps of the United States Public Health Service. Requests for information should be addressed to the Surgeon General.

Appointment to the Public Health Council.—Dr. Frederick Fuller Russell has been appointed to the Public Health Council, to take the place of the late Dr. Thomas M. Prudden. Dr. Russell was in the army medical service from 1898 to 1920, and has been identified with the study of public health problems, both in this country and abroad.

Otolaryngologists Visit Philadelphia.—The Sections of Otology and Rhinolaryngology of the New York Academy of Medicine were the guests of the Section of Otolaryngology of the College of Physicians of Philadelphia, on April 16th. After a dinner at the Union League Club, an inspection of the new building of the College of Physicians was made, and a scientific meeting held.

Philadelphia Medical Club Trip.—On May 15th the Philadelphia Medical Club will visit Washington, D. C., and the Washington Medical Society is planning a sightseeing trip for them, to include among places of more general interest, the Walter Reed Hospital, the Army Medical Museum, and the Naval Hospital. They will also be received by the President on the White House lawn.

Consultants for Veterans' Bureau.—Thirty of the leading physicians of the country have been invited to serve as consultants for the medical service of the Veterans' Bureau. The men chosen represent experts in the fields of tuberculosis, neuropsychiatry, general medicine, surgery, hospital planning and construction, and dispensaries. They include Dr. W. J. Mayo, Dr. Charles H. Mayo, Dr. George W. Crile and Dr. Livingston Farrand.

Civil Service Examinations.—Examinations will be held on May 10th by the New York State Civil Service Commission for Chief Occupational Therapist, State Hospital Commission, $1,500 to $1,800 and maintenance; Physician, Syracuse State School for Mental Defectives, $2,000 to $2,600, with maintenance for self and family; Coroner's Physician, Monroe County, part time, salary probably $780; Resident Physician, Grasslands Hospital, $2,500 and individual maintenance.

Hospital Appropriation.—Governor Smith has signed a bill appropriating one million dollars for fire prevention and safety measures in State hospitals and other institutions.

Yale Faculty Appointments.—Among the associate professors appointed are: Raymond Garrison Hussey, M.D., pathology; Grover Francis Powers, M. D., pediatrics; two teachers are raised to assistant professorships, Ethel C. Dunham, M. D., pediatrics, and Luther K. Muselman, Ph.D., M.D., obstetrics and gynecology.

Dr. Downing on Quackery.—Dr. August Downing, assistant commissioner of education, declared at the meeting of the New York State Medical Society, at Albany, that annual registration of physicians was the only way to rid the State of illegal practitioners, and stated he would resign unless the members of the society stood unitedly for a law to rid the State of quacks.

Benefit for Needy Physicians.—There will be a benefit performance of Shubert's *Vogues,* Monday, May 12th, for the benefit of the starving physicians of Germany. This benefit will be held under the auspices of the Association for the Relief of Needy Physicians of Central and Eastern Europe and of the Ladies' Aid Society of the Lenox Hill Hospital.

Henry Street Settlement Campaign.—Miss Lillian D. Wald, founder of the Henry Street Settlement, has announced the beginning of a campaign to raise one million dollars for the visiting nurse service of the Henry Street Settlement for the coming three years. Over 400,000 visits were made last year to 50,300 patients, there being 250 nurses in the service, yet all calls for assistance could not be met. The service is one third selfsupporting.

Broad Street Hospital Taken Over by Masons.—After months of negotiation the Masons of New York have assumed the maintenance and support of the Broad Street Hospital. The name will not be changed. A new superintendent will be chosen to succeed Dr. Henry C. Clark, but James Barber, founder of the hospital in 1916, continues as its president. The Board will comprise eight medical men and sixteen laymen. Dr. William H. Dieffenbach is vice-president; Troy Alexander, head of the Masonic Hospital Foundation, treasurer, and Dr. Maximilian Stern, secretary. The Medical Board will consist of Dr. William H. Dieffenbach, Dr. Maximilian Stern, Dr. Robert T. Morris, Dr. Lefferts A. McClelland, Dr. Ralph A. Stewart, Dr. Walter Gray Crump, Dr. J. Richard Kevin and Dr. John Hudson Storer.

Personals.—Dr. Owen E. Jones, of Rochester, has been elected president of the Medical Society of the State of New York.

Dr. J. Eastman Sheehan has sailed for London and Paris to lecture on plastic surgery.

Dr. Nils Heitman, chief medical officer of the Norwegian Government in the tuberculosis division has arrived in this country, and will confer with the physicians of the Rockefeller Institute on the tuberculosis problem.

Dr. Louis Friedman has been appointed visiting surgeon to Harlem Hospital.

Dr. Alexander H. Rice will repeat his trip of former years, to explore the head waters of the Orinoco River. Apparatus for a broadcasting station is included in his equipment.

Dr. Shirley Wynne has been named trustee of the New York State Hospital for the Treatment of Incipient Tuberculosis.

At a recent meeting of the medical board, St. Luke's Hospital, Dr. Henry St. Patterson was chosen president; Dr. Winfield S. Schley, secretary.

Dr. Harry Landsman has been appointed anesthetist to the Memorial Hospital.

Dr. Bernard L. Wyatt has been appointed secretary of the Technical Board of the Milbank Memorial Fund. Dr. Donald B. Armstrong, the former secretary, has become assistant to Dr. Lee K. Frankel, of the Metropolitan Life Insurance Company.

Dr. Simon Flexner, director of the Rockefeller Institute of Medical Research, has been appointed a member of the Public Health Council for another term of six years, his service on this Council having started in 1913.

Foreign Correspondence.

PARIS LETTER

(From our own correspondent)

Paris, *March 25, 1924.*

MEETING OF AMERICAN MEDICAL SOCIETY

At the last monthly meeting of the American Medical Society of Paris about fifty physicians, French, American, English and Japanese, listened with great interest to a talk given by Dr. Fuller, of the American Hospital of Paris, on the treatment of diabetes by insulin, and to Dr. Kraus's masterly presentation of the subject of late sequelæ of epidemic encephalitis, which was illustrated by moving pictures. Dr. Fuller reported results obtained at the American Hospital in certain desperate cases of diabetes where patients were saved from almost certain death by the injections of insulin. He clearly defined the indications for treatment and the methods used to determine the proper therapeutic dose.

Dr. Walter Kraus, assistant neurologist to Bellevue Hospital, New York, showed remarkable films of several patients with terrible muscular contractures following attacks of epidemic encephalitis, rendering the victims helpless and permanently crippled. Dr. Douglas McAlpine, late registrar to the Maida Vale Hospital of London, related the history of a number of cases observed in London; and Professor J. J. Lhermitte, chief of neuropathology at the Faculty of Medicine of Paris, described the pathological lesions found in numerous fatal cases examined by him. The conclusion was that many cases of socalled Parkinson's disease and chorea, particularly when occurring in the young, were due to an unrecognized encephalitis lethargica, for the early detection of which general practitioners should be constantly on the alert.

This meeting of the society was by far the most successful in bringing together physicians of various nationalities for the discussion of medical topics of mutual interest. Dr. Edmund L. Gros announced that the society proposed to present at its future meetings, in a condensed form, the teachings of various French professors who were handicapped by not being able to speak English. This should be of great interest to American students in Paris and will be a liaison between American and French physicians.

HARVARD CLUB HONORS DR. ELIOT

The Harvard Club of France gave a dinner on Thursday, March 20th, at the Marguery Restaurant, Boulevard des Italiens, in honor of the ninetieth birthday of President Emeritus Eliot. There was a full attendance.

EXAMINATIONS FOR HOSPITAL SURGEONS

The competitive examinations for hospital surgeons takes place at the Faculty of Medicine during the month of April. The examining board is composed of Professors Walther, Abrami, Baumgartner, Mouchet, Auvray, Riche and Sebileau.

SPECIAL COURSES

Special courses open to all applicants are given at the different hospitals. At the Faculty of Medicine is announced a special course in medical chemistry and applied medicine by Professor Desgrez. At the Children's Hospital, special courses under the direction of Professor Nobécourt. At the Necker Hospital a special course in urology by Professor Leguet, and at Laënnec a special course in tuberculosis.

UNIVERSITY OF NAPLES CENTENNIAL

The international celebration of the seventh century foundation of the University of Naples will occur the ninth of May and will be attended by a delegation from France.

NATIONAL CONGRESSES TO MEET IN PARIS

The National Congress of Ophthalmology will meet in Paris on May 12th; the Congress of Legal Medicine, on May 20th to 28th; the Paris Society of Biology and affiliated societies throughout France, on June 5th; the National Congress of Surgeons, October 6th, under the presidency of Professor Tuffier; National Orthopedic Congress, October 11th.

NAPOLEONIC RELICS TO BE SOLD

Some souvenirs of Napoleon's last hours are to be offered for sale at the Hôtel Drouot, the Paris auction rooms, by their owners, the heirs of Archambault, who was one of the six attendants of the Emperor at St. Helena and a witness of his last hours. The relics were brought away from the island and left by Archambault to his descendants. They include the nightshirt that Napoleon wore at his death, the bandage that was put around his head, the glass from which he drank for the last time, a piece of his coffin, a fragment of the railing around his tomb and some of the earth from it. Recently they were lent to Malmaison, and have been on view there, where, indeed, they should belong, touching relics of the tragic end of one of the greatest figures in the world's history. But unfortunately the little château Museum is not rich, and as the relics will probably fetch a high price in a salesroom it seems probable that Malmaison will lose them. The articles have been catalogued for the sale, which will be held shortly.

MEDICAL PROFESSION CRITICIZED

Exhibitions of appreciation and gratitude shown by a patient to his doctor are so infrequent that he has come to realize the consideration of his services as a simple commercial transaction and as a matter of fact. Whether it is the effect of the war or whether the public mind is becoming so thoroughly impregnated with commercialism, or just what the reason is, it would be difficult to account for the outburst of criticism and complaint directed against the medical profession, which has appeared in a certain number of responsible and reputable journals in France.

In recent publications that appeared in the *Oeuvre* doctors in general are presented as a set of pirates with no other thought than their personal interest and profit. They are represented as without the slightest interest in public hygiene and health; as the foes of prophylaxis: as the adversaries of the public movement for the control and diminution of tuberculosis, for the reason that it will diminish the number of their clients; that they do nothing to help the laboratories and are indifferent to the prescribing of antivenereal remedies because by so doing they would diminish one of the greatest sources of their enormous earnings.

Passing from the class of articles that criticize in general to those that specify individual cases, *L'Echo des Sports* treated as a mercenary robber a doctor who was capable of demanding seventy-five francs for the reduction of a dislocated shoulder and the *Cotidien* published the complaint of a patient who complained of a doctor because he charged more for a visit made on Sunday.

In taking up his pen to defend the medical profession a member of the Academy of Medicine writes as follows: "*L'Echo des Sports* demands from ten to twenty francs a line for the publication of short advertising notices. The prices of the *Cotidien* are still higher. If you were better informed of the laws of your country you would know that in a law passed by the Chamber in 1920 a tariff was established for a long and detailed list of accidents for which a doctor was permitted to charge soldiers in active service who happened to come under his care; article 19 specified seventy-five francs as a charge for a reduction of a dislocated shoulder: and you will find under article 3b that fifty per cent. is permitted to be added to the regular tariff when the service is rendered on Sunday or fête days." He characterizes as odious the attitude of certain journals, and counsels that they urn several times their pen in the ink before they ommence to write, or they may find their swords nsheathed as much to their ridicule as the attack of Don Quixote against the windmills. "You are attempting an impossible task when you try to discredit a profession whose honor is as old as civilization and who has forever exhibited a spirit of devotion and implicity of life equal to that of a priest. When you ncover some of the real abuses that exist in the ractice of our profession, none will come more uickly to your aid or be less pitiless in the prosecuion of wrong, than will the great body of the medial profession."

LONDON LETTER

(*From our own correspondent*)

London, *March 26, 1924.*

EPORT OF THE REGISTRAR GENERAL OF ENGLAND AND WALES FOR 1923

The report for 1923 of the Registrar General of ngland and Wales shows that the year was the ealthiest experienced since the report was first pubshed. Showing how the prevalence of influenza nfluences the mortality from respiratory disease, it ay be pointed out that in 1922 there were in Lonon 12,365 deaths from bronchitis, pneumonia, etc., hile in 1923 there were only 8,676. The deaths rom influenza in 1922 numbered 2,582 as against 52 in 1923. However, it is somewhat curious to ote that the number of deaths from heart disease id not differ materially in the two years. The arked effect which influenza is usually supposed exercise on persons with weak hearts is not reealed by these figures. During 1923 heart disease ecame the most frequent cause of death. It may be id that when influenza is not prevalent the killing iseases in London are, in order of precedence: eart disease, respiratory disease, cancer, consumpon, digestive diseases, and apoplexy; the causes ext in order are old age and accident. When inuenza is prevalent it becomes, because of its effect on respiratory disease, the most outstanding menace of the year. The variations in the death rate are largely a reflection of variations in the prevalence of influenza.

THE FIGHT AGAINST CANCER

Dr. W. S. Lazarus-Barlow, professor of experimental pathology at London University, addressing a meeting at Manchester recently in furtherance of the campaign against cancer, said that the fact that nearly forty-seven thousand deaths from cancer were certified in England and Wales during 1923 was sufficient evidence of the seriousness of the problem. When one came to multiply this figure by the civilized nations of the world, the total mortality reached such proportions that it was impossible to ignore it further. From an economic point of view it had to be remembered that these deaths occurred in many persons who were at the most productive period of their lives. From an intellectual point of view the annual loss to the world was incalculable. Pioneer research work had been slow and very expensive. Much ground had been cleared, so that a further extension of the work seemed opportune, but that work must be coordinated and directed into channels that seemed the most hopeful.

Dr. J. A. Murray, director of the Imperial Cancer Research Fund, delivered the first of four public lectures on cancer at St. Thomas's Hospital a few evenings ago. Dr. Murray said in part that his main conception was to regard cancer as an aberration of the process of repair. Cancerous growths were not confined to man, or to mammals, but were to be found in amphibia. A difficult feature in the study of cancer arose from its capacity to pass to different parts of the body discontinuously. Cases of spontaneous recovery from cancer were practically negligible. There was ground for comfort in that the factors which produced cancer were taking longer to produce their effect than they did in the past. If the increased mortality figures were significant at all, and not due to improved methods of diagnosis, they meant that cancer took longer to produce its effects than it did forty years ago.

AMERICAN HOSPITAL IN LONDON

An announcement was made recently that the Provisional Committee of the American Hospital in London had decided to establish their temporary quarters at the Fulcher Nursing House, 56-60 Hallam Street, Portland Street, W. The plan has fallen through. All inquiries and communications with reference to the American Hospital Association should be addressed to the Medical Director, 27 Wimpole Street, London, W. S.

HEALTH AND ALCOHOL

Professor W. E. Dixon, the renowned pharmacologist, delivered the Lady Priestly Memorial Lecture, under the auspices of the National Health Society, at the House of the Royal Society of Medicine, London, on February 16th, the subject being, Alcohol, Its Use and Abuse. The lecturer declared that all countries during the past fifty years had become and were still becoming more temperate as regards the use of alcohol. An inquiry made among a large number of publicians in London suggested that drunkenness was largely accidental and that food was the solution of the problem. It was said

that people who ate while drinking rarely got drunk. In the past we had been thinking too much of alcohol in the abstract, and too little of the alcoholic man. The high price of alcohol had already induced some alcoholics to resort to methylated spirit as a beverage. This habit existed, to a small extent, over the whole country, but was especially prevalent in Scotland. Prohibition in America had resulted in an illicit liquor traffic, which was a terrible menace to health. The solution of the alcohol problem could not be prohibition, which left all the alcoholics untreated and a menace to law, order, and the general public. Public houses should not be allowed to remain as they were mere drinking places. Surely it was desirable to substitute for them decent and reasonable places of recreation and refreshment.

A WOMAN X RAY SPECIALIST

Lady Constance Butler has been appointed director of the x ray department at St. Andrew's Hospital, and is the first of her sex to adopt this as a specialty.

ROCKEFELLER GIFT TO OXFORD UNIVERSITY

It was announced in congregation at Oxford University on February 19th that the trustees of the Rockefeller Foundation had offered to the university a gift of £75,000 for the development of the department of biochemistry.

HOUSING THE PEOPLE THE GREATEST PROBLEM

As the new Minister of Health, an avowed Socialist, is finding out, the most pressing problem of the day is to house the people properly. It has become possible to estimate with some degree of accuracy the needs of Great Britain in this direction. It is computed in the first place that about one million houses are hopelessly unfit for human habitation. These are dangerously unsanitary and overcrowded. In addition there are five hundred thousand too few houses in England and Wales, and 75,000 in Scotland. Stated in terms of the number of houses which should be built steadily year by year for twenty years, there should be 165,000 to 175,000 built annually in England and Wales. The necessity of doing comprehensive building on an immense scale is obvious. It is the greatest health question of the day in all civilized countries. The guiding motto of health enthusiasts is the destruction of slums and the erection of airy, healthy, wholesome dwellings.

SIR MALCOLM MORRIS AND SIR FREDERICK TREVES

It is curious that Sir Malcolm Morris should have survived his great friend and colleague, Sir Frederick Treves, but a few weeks. When Sir Frederick died it was Morris who succeeded him as head of the Radium Institute. They had been the best of friends for more than forty years and found fame, the one as a surgeon the other as a dermatologist. When Treves died, Morris related how he got the great surgeon to write his first book on surgery. After a brief discussion Treves said he would deliver the manuscript at ten o'clock on a day he named four months later. At ten o'clock to the minute Treves was on the doorstep at Cassell's with the manuscript and walked away with his check. It was Morris who persuaded Sir Arthur Conan Doyle to give up doctoring and take to novel writing alone. Morris had been a director of Cassell's for many years and editor of the firm's medical books.

WASHINGTON LETTER

(*From our own correspondent*)

Washington, D. C., *April 5, 1924.*

To the observant onlooker, Washington is a city of neverfailing interest, a microcosm on which the process of concentration has stamped certain characteristics which exist in all cities, but which are disproportionately stressed here. The essential phychology of the place is that of fear. Bluster though we will, almost every resident of Washington is afraid of something. That is why the atmosphere of secrecy surrounds so many conversations. The truly Washington way to begin a chat is, "Now strictly in confidence," and one hears the "shush-shush" everywhere. Yes, fear is at the base of much of the human action in the District of Columbia—fear of discharge, fear of loss of favor, fear that the people won't return one to this lovely place, and fear that your sinecure shall become that of another.

Therefore, beneath its brave surface Washington really is a sad place, a graveyard of blasted hopes and thwarted ambitions, a scrappile where old officers and discarded politicians linger in complete uselessness, waiting apprehensively for death. In the clubs the little knots of retired officers and ex-civil officials need only a few balls of yarn and some knitting needles to fulfill the requisites of the neighborhood gossip club. There they sit all day long, telling how it was, is, and ought to be done, trading their tittle-tattle in a way which is not altogether harmless. It is pitiful. These men who once did things cling to their tattered shreds of ancient glory, deluding themselves about their former actions and remarks, striving to hide their bitterness toward a world which once worshipped, but now only tolerates. One such will unblushingly relate most dazzling fictions of his own greatness, but woe be unto the youngster who tries to tell of what is being done today.

Washington is filled with men who have been washed up on the beach by a political wave which has floated them from the happy obscurity of some interior town. Even more obscure and submerged is their lot now, mouldering in the lumber room of some government department. Their state is truly forlorn, but it cannot compare with that of the officer's widow class. Here is their refuge, and many a woman once the wife of some prominent official or distinguished officer ends her days in the backwaters of some bureau, endlessly making little black marks on bits of paper. They cling tenaciously to their employment, even till they are so senile that they have to be led to and from office like little children. About ten years ago when the sanitary officers took the screens out of the public offices a terrific wail was raised, because these poor old pensioners were thus exposed to the gaze of a multitude which did not understand that these feeble old women were obliged to perform their little mechanical tasks or starve.

The sight of the retired medical officers trying to build up practices, or of the "sundowner" physician who works in some bureau by days and waits for patients at night, or of once brilliant workers pottering about on routine jobs, would be disheartening were it not relieved by the view of other groups which are successfully pushing forward in politics or science.

Small wonder is it that the true Washingtonian regards his world with a cynical eye. Continuous propinquity with the great and the near great has convinced him of the general flimsiness of the human character, and he refuses longer to be impressed.

Yes, Washington is a place of never failing interest, from the Capitol where the leather lunged spokesmen of the people vociferously orate about trivialities, to the crowds of flowerlike seminary girls on F Street, even to the Speedway where just now the first of Spring's blossoms raise their timid heads.

UNIQUE WAY TO CAPTURE RABID DOG

A reward of ten dollars is offered by Assistant Surgeon General B. J. Lloyd, of the United States Public Health Service, for the apprehension of a dog which bit his son. In his printed appeal Dr. Lloyd said, "All I desire is to find out whether or not the dog may be mad, as this is of the greatest importance. The owner will not be punished nor the dog harmed."

CHILD HEALTH DAY

President Coolidge has endorsed the Child Health Day movement, and May 4th has been dedicated to the purpose. Plans to acquaint the public with work done for the improvement of child health were decided upon at a meeting held by the American Child Hygiene Association on April 3rd. Dr. H. C. Fowler and Dr. Hugh Davis, and many other Washingtonians prominent in social and official life, are lending their assistance to the demonstration.

ANTIHEROINE LEGISLATION

Hearings on the Porter bill, which would prohibit the importation of crude opium for manufacturing heroine, were begun before the House of Representatives Ways and Means Committee on April 3rd. Dr. Charles W. Richardson, of Washington, representing the American Medical Association, advocated the wiping of heroine out of existence, declaring that not only had the Public Health Service, and the Medical Corps of the Army and Navy, discontinued its use, but the American Medical Association was endeavoring to secure its elimination from the practice of medicine. The chairman of the committee stated that opposition to the bill came chiefly from Pennsylvania, and Representative Stephen G. Porter (Republican), of Pennsylvania, author of the measure, remarked that there were a number of large drug houses around Philadelphia. The bill is exciting considerable interest, and the committee has received a number of telegrams favoring or opposing the measure.

CITATIONS FOR HEROISM

Colonel Henry C. Fisher, Medical Corps, United States Army, has been ordered to Washington where he will be in command of the Army Medical School. Colonel Fisher was recently cited for gallantry in action at Santiago, Cuba, while attending the wounded under fire. The citation carries with it the right to wear the silver star on the campaign ribbon. Colonel Thomas J. Kirkpatrick, Medical Corps, United States Army (retired), was cited in the order for attending the wounded under fire at Santiago, July 1, 1898. Colonel Joseph M. Heller, now a Washington physician, was cited for gallantry in action against insurgent forces at Nagullan, Luzon, Philippine Islands, December 7, 1899, in attending the wounded under fire. Dr. Heller was a member of Major Batchelor's "Lost Battalion" which fought its way through the hostile jungles of Luzon to the north coast and the China Sea. He is credited by War Department records as having been the first volunteer in the Spanish-American War.

MOVEMENT FOR BETTER IMMIGRANTS

The sanitary preparation of immigrants destined for the United States has been improved tremendously during the last four years, and foreign nations are now endeavoring to limit emigation to America to those nationals who will be able to pass successfully the physical and mental examinations at our immigration stations. This is largely the outgrowth of a system which was installed in Europe by Surgeon General H. S. Cumming, of the United States Public Health Service, shortly after he took office four years ago. At the present time there are well conducted emigration stations at most of the larger European ports, and announcement has just been made that Italy has established special emigrant houses in Naples, Genoa, Trieste and Bardonecchia. These are provided with hot and cold baths, elaborate systems of disinfection and cleansing; there are medical officers and attendants at these centres for the purpose of supervising the sanitary operations, culling out those prospective emigrants who have physical or mental conditions which would prevent their entry into the United States, and giving treatment for minor conditions which might prove serious or troublesome during the voyage.

Belgium has adopted the policy of allowing no emigrant to leave the country for the United States without undergoing an examination as to his physical and mental condition, and none is allowed to embark unless he is able to meet every requirement of our immigration laws.

By these wise and provident regulations which the United States Public Health Service has brought about, much hardship will be spared immigrants. It is well known that many persons sacrifice their all to come from Europe for the purpose of settling in the United States, only to be turned back at the port of entry because of some condition which might just as well have been discovered prior to embarkation. The cruel disappointments, great expense and genuine suffering thus entailed are entirely preventable, and the work which Dr. Cumming has done represents an international humanitarianism of the most practical and beneficial sort.

MALPRACTICE DEFENSE

The Medical Society of the District of Columbia has formed a legal advisory committee to assist any of its members who are made defendants in malpractice suits. A committee which had been appointed to consider the matter reported to the society that there are a great many suits for alleged malpractice brought against physicians. The legal advisory committee will investigate the merits of each case laid before it, and will act only when it is satisfied that the suit is unjust. Steps will then be taken to obtain expert testimony. The moral backing of the District Medical Society will, it is believed, do much to put a stop to promiscuous damage suits for alleged malpractice, and in the opinion of many leading physicians, this is "one of the most important steps ever taken by this organization."

Book Reviews

DIABETES

The Insulin Treatment of Diabetes Mellitus. By P. J. CAMMIDGE, M.D. (Lond.), D.P.H. (Camb.). New York: William Wood & Company; Edinburgh: E. & S. Livingstone, 1924. Pp. viii-172.

The Antidiabetic Functions of the Pancreas and the Successful Isolation of the Antidiabetic Hormone—Insulin. By J. J. R. MACLEOD, Professor of Physiology, University of Toronto, and F. G. BANTING, Research Professor, University of Toronto. The Beaumont Foundation Lectures. St. Louis: C. V. Mosby Company, 1924. Pp. 69.

Insulin in General Practice. A Concise Clinical Guide for Practitioners. By A. CLARKE BEGG, O.B.G., M.D., Ch.B. (Edin.), M.B. (Lond.), Honorary Physician Swansea Hospital. London: William Heinemann, Ltd., 1924.

As experiences with the use of insulin are increasing in number, more knowledge of its mode of action and of its sphere of usefulness becomes available. Cammidge was enabled to follow carefully some of his earlier cases treated with insulin and to compare his results with those obtained by other methods. *The Insulin Treatment of Diabetes Mellitus* is the result of his experiences, which show that insulin is by no means a panacea in diabetes mellitus. Its wonderful results when properly given and when indicated cannot be denied, but it also has its limitations, contraindications and dangers, which are reported. As time progresses, however, insulin promises to become a most valuable remedy in this metabolic defect.

After relating the history and discussing the mode of action of insulin, the author discusses the clinical results obtained with it. The insulin and fasting methods of treatment are compared. An extensive plan of studying and treating glycosurias is advocated which is quite intricate, but the author sees in it the possibility of obtaining a comprehensive picture of the metabolism in each case handled and of securing individualization in the treatment, which is very important. The types of cases requiring both fasting and insulin treatment are described. Insulin was found very useful in avoiding the dangers of anesthesia and operations. The portal effect is also discussed. Renal glycosuria and diabetes mellitus are differentiated, as are also diminished renal permeability and hypoglycemia. The best results are obtained in diabetic coma. It is asserted that the general practitioner can be safely entrusted with the use of insulin, provided he knows when and how to use it properly. The Folin and Wu method of estimating the blood sugar content is preferred by the author.

* * *

The Beaumont Foundation Lectures were the work for which the authors were awarded the Nobel prize in medicine for 1922. It is specifically directed to the basic knowledge of pancreatic physiology and the therapy of diabetes mellitus. Three lectures are reproduced. In the first lecture Macleod relates the history of insulin and discusses the pancreas in its relation to digestion and the metabolism of carbohydrates. In the second lecture, he deals with the experimental results obtained with insulin. The third lecture, written by Banting, takes up the experimental work upon insulin and its use in diabetes, including the subjects of dose, administration, overdoses and symptoms, and its use in acidosis and coma and in other diabetic complications. No one interested in the treatment of diabetes can afford to be without this epochmaking contribution to medical literature.

* * *

The author of the compact little book on *Insulin in General Practice,* recognizing that the general practitioner requires a plain and concise account of the uses and limitations of insulin and the exact method of applying it in everyday practice, aims at providing this want. For many years Dr. Begg was a general practitioner and therefore is able to appreciate his requirements and the difficulties in the way of treating patients at home. It may be said that insulin would have been more widely employed than has been the case if the general practitioner had possessed the necessary knowledge which he was unable to acquire from the highly scientific accounts written with regard to it.

Dr. Begg's book explains all that is needed respecting the use of insulin, diet and so on in clear and intelligible language. It is eminently practical and gives directions as to how patients may carry out the treatment at home systematically and with a minimum of risk. The book should be useful not only to the general practitioner but to students and nurses and to all who have diabetic patients in their charge.

ENDOCRINOLOGY

Endocrine Diseases. By WILLIAM FALTA, M.D. Translated and Edited by Milton K. Myers, M.D., with a Preface by Sir Archibald E. Garrod, K.C.M.G., M.D. (Oxon.), F.R.C.P. (London), F.R.S. Third Edition, Philadelphia: P. Blakiston's Son and Company, 1924.

Nouveau Traité de Médecine, Fascicule VIII: Pathologie des Glandes Endocrines Troubles du Developpement. By Various Authors. Paris: Masson et Cie, 1923.

Goitre. By F. DEQUERVAIN. Translated by J. Snowman. New York: William Wood and Company, 1924.

Die Krankheiten der Endokrinen Drüsen. Von DR. HERMANN ZOUDEK. Mit 173 Albildungen. Berlin: Julius Springer, 1923.

Rejuvenation. How Steinach Makes People Young. By GEORGE F. CORNERS. Introduction by Dr. A. S. Blumgarten. New York: Thomas Seltzer, 1923.

Geriatrics. By MALFORD W. THEWLIS, M.D. Second Edition. St. Louis: C. V. Mosby Company, 1924.

The Biology of the Internal Secretions. By FRANCIS X. DERCUM, M.D., Ph.D. Philadelphia: W. B. Saunders Company, 1924.

Falta's work on *Endocrine Diseases* was, in previous editions *The Ductless Glandular Diseases.* It is one of the best general textbooks on endocrinology in English. The subject is covered in a very inclusive manner, the salient points of each disorder are emphasized, and the important subjects of diagnosis and treatment receive special consideration. The clarity of presentation and the copious yet well suited addenda by the translator serve to enhance the value of the book. Another commendable feature is that too much stress is not placed on the extreme pathological types of endocrine unbalance, but the *formes*

frustes are given careful consideration. The extreme forms are always more dramatic, and they reveal many important mechanisms, yet the most fruitful field is the adjustment of those cases which show minor defects. Falta has given a comprehensive survey of the literature under the various headings. The book serves as a solid foundation for the clinical study of endocrinology.

* * *

Volume VIII of *Nouveau Traité de Médecine,* a system of medicine in French, edited by Roger Widal and Teissier and Garnier, deals with endocrinopathies in a concise form and covers most of the endocrine disturbances in a systematic fashion. There are numerous illustrations representing typical abnormalities. The apparent aim is to cover the ground without becoming too involved in theory or in delving too extensively into the voluminous literature, most of which is fairly recent. In order to conform with the rest of the series it is necessary that the subject be handled in this way. This system of medicine is excellent as a whole, and commends itself to the reader familiar with French who desires to get the point of view held in France.

* * *

De Quervain's work is a fine presentation of the subject of goitre from the viewpoint of a surgeon. The surgical and anatomical features of the various pathological conditions are admirably presented, and the medical phases of goitre are also given generous consideration. Many ingenious surgical stunts are shown which have been invented and fathered by de Quervain. Frequently the work is original and common sense methods and appeals receive preference over more brilliant if less fundamental procedures. The illustrations have been carefully selected, and are excellent in every way. The references cover a wide field. The book should serve a most useful purpose.

* * *

For the careful student of endocrinology, Zoudek presents a most useful and stimulating work. He constantly searches for underlying mechanisms and advances many alluring and apparently well rounded hypotheses. He presents a rich supply of intensely interesting clinical material, which is worked out in detail and cited in an attractive way. In many ways this is one of the most desirable books in endocrinology for those who can read German.

* * *

Corner's *Rejuvenation* is a popular treatise on the Steinach operation. An attempt has been made to dramatize endocrine achievements, which, from a scientific point of view, can serve no useful purpose.

* * *

Thewlis is a pioneer in the study of geriatrics. A second edition of his work on the treatment and care of the aged is most welcome, coming as it does when much interest has been centred about this subject, on account of the findings of Steinach, Voronoff, and other workers. Perhaps no fountain of youth awaits discovery, but we have much to learn regarding the prolongation of human life. Many things remain to be discovered regarding processes of senility, decay, and old age. This work, while incomplete in many ways, contains a great deal of material of value in everyday practice, concerning many diseases which are more common among the aged, such as cancer, diabetes, nephritis, and pruritus senilis.

* * *

Just what Dercum aims at in his *Biology of the Internal Secretions* is a trifle vague. Be that as it may, he will not find many modern workers who will agree with the major theories he has formulated in this small volume. This holds for both the endocrinological and the psychopathological material presented.

VARICOSE VEINS

Varicen. Ulcus Cruris und ihre Behandlung als Sonderfach für den praktischen Arzt. Von San.-Rat Dr. E. Clasen, Itzehoe. Zweite, vermehrte Auflage. Berlin, Wien: Verlag von Urban & Schwarzenberg, 1924. Pp. 138.

At last the much neglected subject of varicose veins and varicose ulcer has come into its own through a monograph on the subject; it has even been dignified by being hailed as a specialty. The methods with which the author has achieved some excellent results are described in most minute detail. The indifference with which this condition is generally met by both the patient and the physician has led to much suffering on the part of the patient and also considerable economic losses. Furthermore, it is a lucrative practice for quacks. The author recommends this subject as a specialty to physicians who are no longer able to follow active practice or who, for some reason or another, wish to retire to a life of greater ease.

The great value of this monograph is the painstaking detail which is followed in the treatment of varicosities and varicose ulcers, including the various kinds of bandage material, the use of the Unna zinc gelatin dressing and the Linser intravenous injection of one per cent. sublimate solution. Granulation and epithelialization of the wound is promoted by various topical applications, cauterization, curettage, etc. The aftertreatment and contraindications are also included. On the whole, a very readable and complete treatise on the subject.

HIGH BLOOD PRESSURE

High Blood Pressure, Its Variations and Control. By J. F. Halls Dally. New York: William Wood and Company, 1924.

The aim of this manual is to present to the general practitioner in condensed and applicable form the modern views regarding blood pressure. The first portion of the book, devoted to a discussion of the technic of sphygmomanometry, and a short presentation of the physiological factors that determine the level of blood pressure and its variations, is good. The author is to be particularly commended for emphasizing the importance of the diastolic pressure. One cannot quite agree with him, however, when he says on page 22 that the averages of a series of observations indicate the residual pressure. The residual pressure is the final and lowest pressure reading obtained. Dr. Dally places the level of normal diastolic pressure between 65 and 110 mm. Hg. In the experience of the reviewer a diastolic pressure persistently over 90 is to be viewed with suspicion, and one of 95 or over is certainly pathological.

The second half of the book is devoted to a presentation of the clinical aspects of hypertension and

its treatment. There are two short chapters on the arterial pressure in pulmonary tuberculosis and in relation to life assurance. The final chapter is devoted to a sketchy history of the development of the technic of blood pressure estimation. The clinical chapters are rather weak. The reader is left with no clear picture of the clinical course of the disease. Many will disagree with Dally's statement that "the majority of cases of hyperpiesia are due to toxemia arising from infective or autogenic sources." Intestinal autointoxication is considered one of the important causes.

There are a number of other statements which are open to question. It is certainly not true that "permanent hyperpiesis is the chief and most constant cause of chronic degeneration of the heart muscle." In the section on endocrine therapeutics the author accepts as fact the advertising propaganda of a firm known for the inaccuracy of its organotherapeutic claims. The author pays no attention to the important clinical and pathological studies of the German workers during the last decade.

There is a full bibliography which suffers, however, from a number of inaccuracies. Thus references 105, 106, 179 and 183 are incorrectly given. In reference 92 the German title of Romberg's book is distorted in a most curious and bizarre manner. The last paragraph on page 39 is a literal translation of a paragraph in Gallavardin's book on *La tension artérielle en clinique,* although no credit is given to the French author.

TUBERCULOSIS PROBLEMS

Problems in Tuberculosis. Administration, Diagnosis, Employment, Settlements. By Sir James Kingston Fowler, K.C.V.O., C.M.G., M.A., M.D., D.Sc. (Hon.), F.R.C.P. Oxford Medical Publications. London: Henry Frowde, and Hodder & Stoughton, 1923.

The author of this book is well known by having formerly published an interesting volume, entitled *Pulmonary Tuberculosis.* The publishers of *Problems in Tuberculosis* are the same as of the earlier work and have taken pains to devote the three last pages in the *Problems* to a review of the larger book on *Tuberculosis* which treats of the pathology and clinical manifestations, a surprising practice which our American publishers would not dare to indulge in. In this little volume of only sixty pages the talented author has given his views on many phases of the tuberculosis problem. The following are the titles of the fifteen chapters: I, Introductory; II, Landmarks and Incidents in the Struggle Against Tuberculosis; III, Prevalence of Tuberculosis—Mortality; IV, Infection; V, Diagnosis; VI, The Tuberculosis Service; VII, Notification; VIII, The Tuberculosis Dispensary; IX, The Sanatorium; X, The Settlement; XI, The Hospital; XII, Huts, Hostels, Cottages and Industries; XIII, The Settlement as a Community; XIV, Hygienic Workshops; XV, Aftercare Committees and Domiciliary Treatment.

It can not be expected that much that is not known to American medical and social tuberculosis workers can be advanced in a book of this kind, and yet there is a distinctively new feature presented in this little volume. It is the scheme for a tuberculosis settlement which, according to the author, should consist of 1, a sanatorium department—diagnosis ward, clinical ward, operating theatre (visiting surgeon), x ray installation, clinical laboratory, sanatorium block, graduated labor; 2, hospital department—hospital block; 3, industries department—huts, hostels, cottages, workshops (training, handicrafts), outdoor industries, sale of produce. The terms which may need definition for the American reader are "huts" and "hostels" as part of the industrial department. A hut would be the equivalent of our open air leanto, but only with two beds, still attached to the sanatorium but where the maintenance of the patient is less expensive than in a bed in an expensively equipped ward. Here the patients are still fed by the settlement paying so much a day. The hostel is run on the lines of an Army mess, with an inmate at the head of it who acts as caterer, such of the food as the settlement produces being purchased at the price of the day. Sir James prefers the expression settlement treatment to sanatorium treatment.

A veritable mine of maxims is contained in the concluding chapter under the title *Obiter Dicta,* from which the reviewer only desires to quote a few:

"When the struggle against tuberculosis began no one knows; when it will end, no one can tell."

"If some tuberculosis dispensaries had been more concerned with contacts and less with tuberculin, things might have been different."

"A light occupation in the open air is seldom found."

"Strange things may happen when a clinician who has 'scrapped his stethoscope' calls in a radiographer who is not a pathologist."

"A country that rejects compulsory vaccination and retains its slums must pay for smallpox hospitals and tuberculosis settlements."

PLASTIC SURGERY

Rubber and Gutta Percha Injections. Subcutaneous Injections of Rubber and Gutta Percha for Raising the Depressed Nasal Bridge and Altering External Contours. By Charles Conrad Miller, M.D. Chicago: Oak Printing & Publishing Co., 1923. Pp. 99.

This monograph deals with an entirely new subject—the therapeutic use of rubber and gutta percha for subcutaneous injections for the purposes of plastic surgery. The materials used heretofore have been found unsatisfactory for one reason or another. Several forms of rubber seem to resist the action of body fluids indefinitely and therefore these products ought to prove useful in the filling of body spaces or depressions, provided such injections are made discreetly in properly selected locations. Inasmuch as various samples of rubber have different constituents and often contain impurities incident to its manufacture, each sample of rubber used should first be tested out on animals. A special syringe and technic of injection are described. Extreme precautions must be taken to prevent infection if success is desired. The methods of preparing gutta percha for injection are described, and freely cured rubber is the best for the purposes of injection. Rubber in ether is the easiest to prepare and use, but gutta percha, softened by heat, is almost certain to be permanent, although it is rather difficult to handle. The patient must be warned that these methods are not as yet recognized as established surgical procedures.

Medicoliterary Notes.

Some interesting sidelights are thrown on the drug problem in this country by John Campbell in an article on the opium supply in the *Asiatic Review*, a British colonial quarterly, for January. His first contention is that India, the American press to the contrary, is not the source of the opium supply in the United States, but various countries not subject to international control, among them, Turkey and Persia, where the opium crop constitutes one of the chief sources of revenue.

* * *

The *American Journal of Public Health* for February contains three discussions of the relation of the public health nurse and the practising physician. The first is written by Dr. Ira S. Wile from the viewpoint of the physician; the second, from the viewpoint of the nurse, is by Alta Dines, R.N., director of nurses of the Association for Improving the Condition of the Poor, New York City; the third, from the viewpoint of the health officer, is by Henry F. Vaughan, Commissioner of Health of Detroit.

* * *

Now that secret archives in the capitals of Europe are being opened and their contents brought to light and published, documents are being found that clear up some of the longstanding historical and political mysteries of the world. The finds of the Russian Revolutionists have been given considerable press comment, but those of the German Republic are not so well known, although of equal importance. One of these is a note from the Kaiser to Lord Salisbury, written at the time of the Jameson raid in South Africa, which would undoubtedly have precipitated war at that time if Lord Salisbury had not been out of town for the week end and so did not receive the note before the Kaiser had had time to think better of his language and recall the letter unopened. Other documents show the complete innocence of Captain Dreyfus, sentenced to Devil's Island nearly thirty years ago. Still others show that Wallenstein, assassinated nearly three hundred years ago by imperial command, had been plotting to make himself King of Bohemia.—*Living Age.*

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The timely and instructive paper on refuse disposal in European cities, read by George W. Fuller, consulting engineer of New York City, before the 1923 meeting of the American Public Health Association, is printed in the January number of the *American Journal of Public Health.*

* * *

Even in China, the flapper is coming into her own. Some of the papers have recently quoted a statement from the Chinese press published by a high school girl of eighteen to the fact that she declared to be null and void a betrothal agreement made during her infancy, according to the age old Chinese custom, by her parents and those of a young man whom she did not wish to marry.

* * *

In a study recently published by Prof. Murchison of Johns Hopkins University, it was found that about seven thousand prisoners in America today are college graduates. The list includes lawyers, ministers and doctors.

* * *

America, it seems, is not the only country to be accused of suffering from the "pretty girl craze," as evidenced by its posters, advertisements, magazine covers, etc. Paul Westheim writes in an article on the psychology of bad taste, quoted from *Die Glocke* in a recent issue of the *Living Age,* as follows: "The public does not want the depiction of human character. It wants a series of romantic variations, with a pretty woman, well dressed, for the theme. Then it can enjoy the fashionable world and fashionable women as it sees them in its nightly dreams. The fact that they are so overprettified that all traces of earth's toil and all human reality are falsified out of them makes them popular."

* * *

The Imperial Cancer Research Fund, under the direction of the Royal College of Physicians of London and the Royal College of Surgeons of England, has issued its eighth scientific report. The volume is divided into two sections: first, papers dealing with the behavior and character of cells already cancerous; second, papers dealing with the induction of cancer—the changes which cells undergo in becoming cancerous. The cuts and plates, which are numerous, show the clarity and excellence characteristic of British medical reproductions.

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The Street of the Eye, by Gerald Bullett, is a collection of short stories about psychologically abnormal types. Most of them are excellently written and real thrillers in arousing and holding the reader's interest.

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The American *Review of Reviews* for April translates excerpts from the abstract of an interesting address on race psychology delivered recently by E. Oberhummer before the Austrian Academy of Sciences in Vienna.

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Prof. Raphael Dubois, of the physiological laboratory at Tamaris-sur-Mer, France, is reported to have announced that he has discovered that the administration of oxygen will cure both seasickness and mountain sickness.

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In view of the interest in James K. Hackett's revival of *Macbeth,* it is worthy of note that the first extant review of that play of Shakespeare was from the pen of one Simon Forman, M.D., of London, known as an astrologer, quack, and dealer in arts of magic. He kept a kind of diary, which he called *The Book of Plays and Notes Thereof,* and in which he tells of seeing *Macbeth* at the old Globe Theater on April 20, 1610.

* * *

The Training of Midwives is the subject of a full report by Janet M. Campbell, senior medical officer for maternal and child welfare of the British Ministry of Health, published as *Report No. 21 on Public Health and Medical Subjects.* The report deals with conditions in all of the countries of Central and Northern Europe except Russia. A full abstract by Taliaferro Clark of the U. S. Public Health Service may be found in *Public Health Reports* for February 22.

* * *

A series of lectures delivered at the Lowell Institute, Boston, in 1922 by Prof. William M. Wheeler, on *Social Life Among Insects,* is now available in book form. The publishers are Harcourt, Brace & Co., New York. One of the observations emphasized by Prof. Wheeler is that a species developing parasitism is doomed to ultimate extinction, and that change from an independent, individual form of existence to a social state is the straightest road to acquiring countless inescapable parasites. Is there any significance in this for man?

* * *

Standards of Care for Convalescent Children, is the title of a small pamphlet recently issued by the Sturgis Research Fund of the Burke Foundation. The writer is Hortense Kahn, who presented the subject as an essay for a Master's Degree at Johns Hopkins University.

* * *

A play that aroused, when presented recently at the Comédie Francaise in Paris, as great a commotion as did *Hinkermann* in Dresden, is Paul Raynal's tragedy, *Le Tombeau sous l'Arc de Triomphe.* The play deals with an imaginary career fashioned by the playwright of the Unknown Soldier and his love. The play has been represented in this country by the press as mere Parisian pornography, but those who have seen it find nothing shocking or really immoral in it.

* * *

A very useful section of the new *Book Review Supplement of Mental Hygiene* is a full but selected list of books on mental hygiene and allied subjects, by Dr. Frankwood E. Williams. The titles are classified as General, including anthropology, biology, psychology, and miscellaneous; Childhood; Psychoanalysis; Mental Disease; Mental Defect; Delinquency; War Neurosis; Nursing; and Journals.

* * *

In the article by Dr. Frederick Willius on "Changes in the Mechanism of the Human Heart Preceding and During Death," published in our issue for March 19, 1924, a regrettable error occurred. In Fig. 1, the letters on Parts I and II were transposed, thus making the explanatory legend wholly unintelligible. Corrected cardiograms will appear in the author's reprints.

Abstracts from Current Literature

ENDOCRINOLOGY

The Gas Exchange in Diseases of the Thyroid Gland.—John T. King, Jr., (*Bulletin of the Johns Hopkins Hospital,* September, 1923), analyzed a series of forty-eight one hour periods, the observations being made on patients with thyroid disease in the basal condition, with the following results: The average CO_2 elevation is 0.8 per cent. less than the elevation of direct calories, and there is an average error in correlation with direct calories from hour to hour of ± 5.2 per cent. The average elevation of indirect calories is 2.1 per cent. above direct calories for those experiments. The error in the correlation of direct and indirect calorimetry from hour to hour is ± 5.8 per cent. The average elevation of O_2 is 6.5 per cent. above the direct calories, and the average error in correlation from hour to hour is ± 5.8 per cent. The average gaseous ratio is 0.791 in the first hour and 0.796 in the second. In the third hour it is 0.767. In observations on quiet patients the gaseous ratio falls in the second hour in eleven cases and rises in sixteen. In restless patients it falls in five cases and rises in six. The conclusion is reached that CO_2 elimination affords the best index to the heat production in thyroid disease, as judged by direct calorimeter experiments.

Treatment of Hypothyroidism by Thyroid Transplantation.—Albert Kocher (*British Medical Journal,* September 29, 1923), believes that homotransplants from the hypertrophic thyroid gland in a severe but recent case of exophthalmic goitre, which shows cellular hypertrophy and active new formation of vesicles, are preferable. The upper pole or posterior part of the gland near the superior thyroid artery should be selected. It is most important that the transplant be implanted immediately after its removal from the donor. The author prefers the upper end of the tibia for the site of implantation because it is very vascular and also because it has a special affinity for thyroid tissue. The transplant may also be implanted into the sheath between the fascia transversalis and the peritoneum, or into the peritoneal cavity. In the latter case the parietal peritoneum should be sutured over the transplant and not left free in the peritoneal cavity. Success is achieved only if the wound heals without a rise of temperature or any other postoperative reactions. The preoperative and postoperative treatment are most important. Thyroid should be administered for some time before and several weeks after the transplantation, especially in total congenital absence of the gland.

Functional Liver Tests in Thyroid Diseases.—Otto Pollak (*Monatsschrift für Kinderheilkunde,* October, 1923), observed an abnormally increased excretion of amino acids in goitre in children after the oral administration of fifty gm. of gelatin, but no such functional liver disturbance was demonstrable in cases of myxedema. The galactose test also showed a greater excretion of galactose in the urine than is normal. The Vidal hemoclastic crisis was positive in both the goitre cases in children and in myxedema. Even though the tests were few in number, the author, nevertheless, feels justified in calling attention to the fact that thyroid gland disturbances in children are associated with and followed by functional disturbances in the liver.

Treatment and Prophylaxis of Thyroid Insufficiency.—Arnold Josefson (*Hygiea,* November 15, 1923), who in 1915, in his paper on endocrine disturbances, stated as his opinion that large doses of thyroid extract were preferable to small doses in cases of thyroid insufficiency, now adduces fresh proofs to substantiate his assertion. He describes some cases in which there were none or only insignificant results from small doses but in which large doses, 0.30 x (1—6), had a notable and lasting effect. By means of photos and röntgenograms—many illustrations of which appear in his article—he shows how quickly feeding with large doses of thyroid extract produces effect. Also he adds new observations on the interdependence between the organs of internal secretion and capillary tonus. Thus in a case of acrocyanosis he observed with the aid of capillaroscopy on the fingers how quickly the capillaries became normal again under treatment with thyroid extract. The author considers that enlargement of the thyroid gland is often a sign of hypothyroidism, and not as might be expected of hyperthyroidism, the gland becoming enlarged in its increased effort to fulfill its functions, an attempt of nature to compensate for the deficiency of thyroid gland, and exemplifies this with cases of large goitre that have become quickly reduced by treatment with thyroid extract. The importance of prophylaxis is pointed out; thus to mothers who show signs of hypothyroidism or belong to families affected with endocrine disturbances should be administered thyroid extract during pregnancy and lactation. Also in some strumous districts of Sweden he advises iodine treatment as a preventive measure, this latter, however, with extreme care and watchfulness, as harm may be done thereby.

Effect of Iodine upon the Thyroid Gland.—B. Breitner (*Wiener klinische Wochenschrift,* August 23, 1923) maintains that the colloid should be considered as a stored secretion of the thyroid gland, that it is activated by iodine according to the needs and given up to the general circulation. In hyperemic goitres the delivery of the stored secretion is accelerated by medication with iodine, but in parenchymatous goitres, on the other hand, it is inhibited. The differences observed in the effect of the iodine in exophthalmic goitre may be ascribed to a different etiological factor of the goitre. The inhibition of the secretion is responsible for the favorable action in certain forms of exophthalmic goitre, which are due to hyperthyroidism.

Thymus Gland Enlargement in Infants.—E. J. Barnett (*Northwest Medicine,* November, 1923) says that an enlarged thymus occurs frequently in infants and causes symptoms noted by the mother, usually mild, but persistent or recurring with exacerbations. The predominating symptoms are choking spells, especially after nursing and during the night. Severe attacks of cyanosis may be the only complaint. A persistent cold in an infant from shortly after birth is indicative of this condition. Percussion of the chest often gives surprisingly accurate information as to the presence and lateral extent of the gland. The direct diagnosis depends on fluoroscopy and the radiogram. One x ray treatment is usually sufficient to relieve the symptoms and cause atrophy of the thymus.

Importance of the Adrenal Glands in the Action of Certain Alkaloids.—Charles W. Edmunds and Putnam C. Lloyd (*Journal of Laboratory and Clinical Medicine,* October, 1923) observed a leucocytosis following the administration of physostigmine to normal dogs, which, however, is considered an epinephrine effect, due to the epinephrine present in increased amounts in the blood due to the stimulation of the adrenal glands by the physostigmine. Surgical removal of the adrenals, or other influences, such as ergotoxin, atropine, and curare, which will remove these glands functionally, prevents the leucocytosis following physostigmine. The red blood cells are not affected by small doses (0.5 mg. per kilo of physostigmine), but 0.7 mg. per kilo causes a marked increase in their number in the circulating blood. This does not seem to be a phenomenon of altered distribution, but due to an action on the bone marrow.

Influence of Intestinal Bacteria upon the Thyroid Gland.—D. J. Harries (*British Medical Journal,* March 31, 1923) concludes as follows: 1. Exophthalmic goitre is due to the excessive absorption of tryptophan from the intestine; this in turn is traceable to the absence of the indole producers from the intestine. 2. The absence of the indican from the urine indicates the absence of indole producers from the intestine. 3. In exophthalmic goitre the early disappearance of indican from the urine is of serious prognostic importance. 4. Operative surgery has a definite place in the treatment of exophthalmic goitre. Medically, much can be done by suitable dietetic measures. 5. Diffuse parenchymatous goitre is characterized by an excess of indican in the urine, suggesting an excessive destruction of tryptophan. If this excess gives place to a diminution or complete disappearance of indican, that suggests that the case is assuming the exophthalmic form. 6. Myxedema is due to atrophic changes in the thyroid gland, which loses its capacity for dealing with the circulating, tryntophan, whether that substance be excessive, deficient, or normal in amount. The disease is thus compatible with the presence or absence of urinary indican.

Dangers of Iodine Therapy with Special Consideration of the Modern Efforts in the Prophylaxis of Goitre.—O. Roth (*Schweizerische medizinische Wochenschrift,* September 13, 1923) endeavors to show that severe symptoms of hyperthyroidism may be produced, especially in adults, following the use of small doses of iodine in proprietary preparations, such as are recommended in the schools of Switzerland and purchasable in the drug stores. The symptoms receded under suitable treatment only in some of the cases. In one case dilatation of the heart resulted, with perpetual arrhythmia, which could not be relieved by treatment. Another patient, who previously was able to take iodine without injury, suffered from severe symptoms even with the same dose. The tolerance for iodine varies in the same individual at different times. The use of iodized table salt, as has been practised in some of the cantons of Switzerland, may lead to hyperthyroidism. Unless greater care is taken in iodotherapy, the whole subject of the prophylaxis of goitre may become discredited.

DIABETES

Insulin Therapy of Diabetes Mellitus. — H. Sahli (*Schweizerische medizinische Wochenschrift,* August 30, 1923) states that the diabetic disturbances consist in an excessive mobilization of the sugar in the liver and in an excessive formation of ketone bodies in the liver as a result of the diminished formation of lactic acid from glycogen and sugar. As a result of its hormone effect, insulin strikes at the root of the disturbances and consequently affects the hyperglycosuria or glycosuria and acidosis to approximately the same extent. This is the crux of the great advance of insulin therapy, inasmuch as the purely dietetic treatment frequently increases the acidosis in severe cases, as long as it is not improved by an improvement indirectly and secondarily of the carbohydrate tolerance. Only moderately severe and severe cases of diabetes which are not affected by dietary measures alone, should be treated with insulin, and this insulin therapy should be carried out with strict individual regard to the dose, with a careful observation of the diastatic rules according to the most recent points of view. The future will show to what extent insulin is indicated in other diseases, as for example in obesity, diseases of the liver, and in endocrine disturbances (exophthalmic goitre), and to what extent it may do harm or lose its efficiency in diabetes as a result of the system becoming accustomed to it (diminution of the activity of the pancreas?).

Diabetes and Insulin Therapy. — Alfred Gigon (*Schweizerische medizinische Wochenschrift,* September 20, 1923) explains his experimental findings in animals according to the theory of a diminished consumption of sugar. The sugar, as a result of the action of insulin, reaches the proper spot in adequate form, the hunger for sugar is appeased, the hyperglycemia is reduced and the formation of glycogen can proceed. The following plausible hypothesis may be advanced: As a result of the insulin, the sugar is decomposed into physiological intermediate products, which are utilized by the normal and diabetic organism. In diabetes, there is a deficit of such products as a result of the improper decomposition of sugar. If the deficit is covered, a well being immediately sets in. An overproduction of these decomposition products leads to severe disturbances. The injection of glucose provides conditions, which render the overproduction of such products partly harmless. The ion concentration should be thought of in this connection. The insulin displaces the ion concentration toward the alkaline point and the glucose displaces it toward the acid side. Still another factor to be considered is the effect upon the albuminous metabolism. Under the action of insulin the albumin sugar seems to be utilized more advantageously. It is not absolutely certain that the carbohydrate disturbance is the primary factor in human diabetes, as it is a well known fact that in diabetics results are achieved with the reduction of the ingestion of albumin, which are impossible with a onesided limitation of carbohydrates. It is also an interesting fact that the internal secretion of the pancreas may be rapidly destroyed by trypsin, whereas it is not affected by the lipase of the pancreatic juice. An abnormally abundant albuminous diet produces an increased production of trypsin. Is it not possible to imagine, that as a result of this increased labor of the pancreas in the formation of trypsin, the activity of the islands of Langerhans suffer and become insufficient after months and years?

Insulin Treatment of Diabetes.—W. Löffler (*Schweizerische medizinische Wochenschrift,* September 27, 1923) calls attention to the fact that the aim of insulin therapy is not the cure of coma but its avoidance. This is possible in a great number of cases, which would end fatally from coma without the use of this effective remedy even with the aid of a most suitable diet. Attention is also called to the possibility of overdosing and its unpleasant sequelæ. When injecting insulin we must always be absolutely sure that the organism still has a sufficient amount of carbohydrates at its disposal so that an excessive fall of the blood sugar can be eliminated. Insulin is, therefore, contraindicated in renal glycosuria—the socalled renal diabetes, which is not so rare as is generally believed. Renal glycosuria is characterized by the fact that the blood sugar content in the fasting state is normal, that an alimentary increase in the blood sugar does not occur or is less extensive than normally, and that, nevertheless, a more or less pronounced glycosuria exists, which, however, is independent of the carbohydrate content of the food. As the renal glycosuria is not due to a raised blood sugar level but to an abnormal permeability of the kidney for glucose, a marked reduction of the blood sugar level by insulin might lead to serious disturbances. The postulate should be established, that in every case in which insulin is used a careful control of the ingestion of carbohydrate and of the excretion of sugar in the urine must be carried out. Blood sugar estimations are also very valuable. If these precautions are not carried out, the patient is subjected to injury and this effective remedy will become discredited. The sterilization of the syringe and needle is absolutely necessary owing to the marked predisposition of diabetics to infection. The inunction of insulin has the disadvantages of great wasting in the material and the possibility of infection of the skin. In addition to its enriching the therapy of diabetes insulin also has the property of advancing our knowledge of carbohydrate metabolism and the pathogenesis of diabetes. The manner of its action is not as yet entirely clear. It may be possible to differentiate various forms of diabetes with the aid of insulin. The treatment with insulin requires the greatest amount of individualization.

Diet Lists for Diabetes in Conjunction with Treatment with Insulin.—All medical journals are overflowing with papers on the treatment of diabetes with insulin. The prevailing opinion is perhaps expressed by A. Muir Crawford (*Glasgow Medical Journal,* December, 1923) "Insulin does not cure diabetes. No doubt, when it is administered the symptoms disappear, the patient regains health and strength and puts on weight, and after years of misery he may be made fit to return to a useful occupation and to a happier life, but on stopping the insulin the symptoms return. Yet we must remember that diabetes, if untreated, is a progressive disease, and that if treated without the aid of insulin benefit can only be obtained in many cases by a cruel and almost unbearable restriction of diet; whereas, with its aid, not only is the patient enabled to enjoy a more liberal and more pleasant dietary resulting in a general all-round improvement in physical fitness, but there is the hope that the strain on the islets may be so far relieved that they can develop their natural powers of regeneration with ultimate advantage to the patient.

But it seems evident that the diet still needs to be restricted, and diet lists have already appeared in a number of journals. Seale Harris (*Southern Medical Journal,* March, 1924) gives an excellent discussion on the use of insulin by the general practitioner and presents six well worked out diet lists for diabetics of various ages and weights, It is well to bear in mind the warning with which he starts, that it is not possible to prepare a diet list that will suit all cases of diabetes; that each patient has to be dieted and treated with insulin according to his individual requirements, depending upon his age, height, weight, and upon the kind and amount of work he is doing. It is also important to consider the patient's general condition as well as to know whether or not he has acetone and diacetic acid in his urine. "What is one man's meat is another man's poison" is surely true in diabetes. For instance, if a patient has a large amount of fatty acids in his blood and tissues, the diet that the average diabetic needs would increase the acidosis and perhaps bring on coma.

The diet lists sent out by well meaning manufacturers and those given in certain text books enumerating the foods the diabetic may take and those in the "must not take" or

"to be avoided" lists are almost as bad as letting the patient eat what he wants. No diet list is of value in diabetes unless it gives the quantities of food to be taken; and it is not possible to outline in any one diet sheet anything like the quantities of the various foods needed by diabetics of all ages, weights and conditions.

Frederick Hipwell presents two diet lists in an article entitled the Practical Application of Insulin in Diabetes (*Canadian Medical Association Journal,* Feb., 1924).

The Use of Insulin in Combined Diabetes Mellitus and Tuberculosis.—Labbé, Bith and Boulin (*Bulletins et mémoires de la Société médicale des hôpitaux de Paris,* January 3, 1924), report four cases of diabetes with poor nutrition and acidosis, complicated by pulmonary tuberculosis, in which insulin was used. In none of these cases did the insulin appear to exert any aggravating action on the tuberculous condition. In one instance the temperature, slightly febrile on admission, descended to normal when the insulin treatment was given. In one case, a tuberculous anal abscess was incised and healed rapidly, without sinus formation. While the insulin treatment neither improved nor aggravated the lung condition, it enabled the patients to deal with the tuberculosis as if they were not diabetics. Their general condition was greatly improved, sensations of malaise, weakness, lassitude and mental depression disappearing and the weight increasing. Their carbohydrate tolerance being increased, they were enabled to take more food. The acid intoxication, threatening at first in some of the cases, always quickly disappeared. The insulin seemed to act as favorably on the diabetes as if the patients had not been tuberculous. Apparently, pulmonary tuberculosis is not a contraindication to the use of insulin, as some have asserted, though it is doubtless advisable to keep a careful watch on the pulmonary lesions in such cases.

Studies of Diabetes Mellitus.—William S. McCann and R. Roger Hannon (*Bulletin of the Johns Hopkins Hospital,* March, 1923), in a study of the respiratory exchange following the ingestion of glucose, glycerol, calcium hexose phosphate, and calcium glycerophosphate, state that there are apparently two types of change produced in the respiratory exchange after the ingestion of glucose by individuals who are in the stage of severe diabetes with glycosuria and hyperglycemia. In one type the respiratory quotients are depressed for an abnormal length of time; in the other, the quotients rise at a rate approximately normal. All the individuals of the former type were responsive to treatment and subsequently a good carbohydrate utilization. The two subjects of the latter type failed to respond to treatment of any kind. The clinical improvement of the patients of the first type is accompanied by an increased ability to oxidize glucose. These two different types of response to the ingestion of glucose raise the question of whether there may not be two or more types of diabetes mellitus at present clinically indistinguishable, but in which the disorder involves different mechanisms. Hexose phosphate taken in the form of an ester of phosphoric acid was more readily oxidized in certain diabetics than was glucose. The effect of the ingestion of calcium glycerophosphate upon the respiratory change was variable.

Duration and Magnitude of the Hypoglycemia After Insulin.—Elmer L. Sevringhaus, Elizabeth Kirk, and Harold J. Heath (*American Journal of the Medical Sciences,* November, 1923) present the following conclusions. 1. In normal human subjects the extent and the duration of the hypoglycemia after the injection of insulin are so variable that the result cannot be predicted from the dose per kilo of body weight. 2. The extent of the hypoglycemia and the duration of the low level are roughly parallel to the dose of insulin. 3. The depression of the sugar tolerance curves by insulin is not uniform in type or extent. 4. With increasing doses of insulin both the extent and the duration of hypoglycemia are increased. 5. The blood sugar concentration at which symptoms of overdoses of insulin appear vary in different individuals in the region from 40 mg. to 65 mg. per 100 c.c. of blood. 6. The concentration of sugar in the urines of normal subjects does not follow the blood sugar level with or without insulin. It is related more closely to the urine volume. 7. The treatment of diabetics with small doses of insulin at intervals of not less than six hours is preferred to the use of larger doses at very long intervals, or of smaller doses at too short intervals. 8. Intranasal application of insulin is without effect.

GENITOURINARY DISORDERS

Treatment of Syphilis.—Dind (*Schweizerische medizinische Wochenschrift,* October 18, 1923) calls attention to the fact that the lesions on the mucous membranes and around the anus and vulva in syphilis show a marked tendency to persist and the cutaneous eruptions show a marked tendency toward spontaneous disappearance. Therefore it is impossible to draw any conclusions regarding the efficacy of treatment from the disappearance of lesions on the skin. He is in favor of using the arsphenamine preparations as a routine and mercurial preparations only during the intervals of treatment.

Intraspinous Salvarsan Therapy in Parasyphilitic Diseases.—Eugen v. Thurzó (*Wiener klinische Wochenschrift,* September 20, 1923) states that, with a suitable method and dose, the intraspinous treatment with neosalvarsan, in itself, is absolutely harmless for the patient. In many cases of late syphilitic nervous lesions, which are refractory to other therapeutic measures, the spinal fluid findings and the clinical picture show more or less improvement after intraspinous treatment. This therapy may therefore be used not only in parasyphilitic diseases, but also in early syphilitic conditions of the nervous system and in cases of latent, secondary, and recurrent syphilis, in which the spinal fluid is pathological and in which only a slight improvement is obtained after other methods of treatment.

Pathological Changes in the Kidney in Congenital Syphilis.—Ernesto de Souza Campos (*Bulletin of the Johns Hopkins Hospital,* August, 1923) found histological changes in the kidney in sixty-nine cases of congenital syphilis, in the interstitial tissue and the parenchymatous apparatus. The interstitial changes consisted mainly of a cellular infiltration around the bloodvessels of the cortex. The medullary zone was rarely affected. The kidney pelvis was frequently infiltrated with cells which have the same structure as those around the bloodvessels. The capsule showed only a slight infiltration in a few cases. The infiltrating cells of the kidney in congenital syphilis were similar in structure to the bone marrow cells, being nongranulated myeloid cells, neutrophilic and eosinophilic myelocytes, normoblasts, and megalocaryocytes. The kidney in congenital syphilis is retarded in its development, as is shown by the presence of the "neogenic zone" in kidneys of full term stillborn syphilitic babies, while this is not observed in normal full term babies.

Bacilluria.—Julius Burnford (*West London Medical Journal,* October, 1923) states that when this condition is suspected the urine should be obtained with a catheter from the female, but in the male it is sufficient to collect the urine after allowing the first part to escape and wash out the urethra. Bacilluria is now looked upon as an entity which manifests itself in an acute or chronic form with periods of quietness alternating with exacerbations, or in a latent form of indefinite duration, causing no symptoms but undoubtedly potent for harm. More frequent in the female, it occurs at all ages but especially in pregnancy and during the puerperium. The condition is usually due to the Bacillus coli, though the Bacillus proteus, Bacillus paratyphosus, Bacillus typhosus, Bacillus pyocyaneus, streptococci, Micrococcus melitensis, and Bacillus tuberculosis are occasionally also found. When a bacilluria resists the ordinary methods of treatment, some such condition as calculus or chronic cystitis should be suspected. The primary types show clinically an acute form with active symptoms, rarely fulminating, with intermittent pyrexia, vomiting, rigor, and sometimes diarrhea. Characteristically there is frequent micturition of highly acid urine, the passing of which produces a scalding sensation. The urine contains pus and Bacillus coli. The symptoms usually subside with treatment, especially in very young children. The various types include that of pregnancy and the puerperium, that occurring after appendectomy and the latent type. This condition must be differentiated from typhoid fever, influenza, malaria, tropical fevers, acute abdominal conditions, and septicemia. The treatment includes the reduction of the acidity of the urine by potassium citrate, urotropin, autogenous vaccines, and the treatment of an existing cervical or uterine infection. The most satisfactory treatment for chronic cases is vaccines. The urine should be examined culturally as well as microscopically. Pregnant women should have their urine examined both for bacteria and for albumin.

Letters to the Editor.

A FALSE IMPRESSION

NEW YORK, *April 7, 1924.*

To the Editor:

I note in your last number a reference to "the late Dr. George Henry Fox" and am curious to know who he was. He must have been a very modest and retiring person since during the fifty years and more that I have lived in New York I have never known any doctor here, other than myself, who claimed that name.

Mark Twain once said that the report of his death had been greatly exaggerated. I am sorry that he ever said it as I have grown tired of hearing it repeatedly quoted as a new and up to date joke. But now I can appreciate his feelings as I am still alive, or at least imagine that I am, which is perhaps the next best thing. I do not always feel as lively as I did in years gone by but I still go to my office every day and would add (if I thought you would not blue pencil it) 114 East Fifty-fourth Street, office hours, 11 to 1.

I have plenty of spare time there, am always pleased to see old friends, and would be especially glad to welcome the writer of the reference quoted above and to learn whether he is able to make a diagnosis between me and my ghost.

GEORGE HENRY FOX.

THE PHYSICIANS' HOME, INC.

NEW YORK, *April 7, 1924.*

To the Editor:

The enclosed letter should be of interest to physicians. Its publication will enable your readers better to judge of the work being done. No doubt many will feel it a privilege to contribute to this most worthy cause.

MAX EINHORN.

CANEADEA, N. Y., *April 3, 1924.*

Max Einhorn, M.D.,
Director Physicians' Home, Inc.,

On March 1, 1924, The Physicians' Home had been in active operation two years.

During this period we, as a board, have worked hard and have made good progress when we consider we have worked with a limited capital. I feel it my duty to report at this time what has been accomplished during these two years under your directorship.

Farm house completely done over on entire inside with beaver board and decorated. Hardwood floors and trim throughout and finished natural.

Fireplace and chimney installed in spacious living room.

Kitchen made practical and convenient with cupboards and lighting.

Four bathrooms equipped complete with required amount of light.

A fully equipped laundry in the basement eighteen feet by thirty-six feet with concrete shutes to laundry from first and second floors.

Acquisition of three acres of woodland with sixteen foot right of way from highway.

Installation of vapor heating system furnishing adequate heat in the coldest weather. This is equipped with hot water attachment for laundry, kitchen, bathrooms, and two assembly rooms.

Kitchen and all rooms except four bedrooms furnished with good standard type of substantial furniture, fixtures, pictures, and hangings. We are a little short of rugs.

The addition of eight new rooms, furnished, heated and lighted and finished in walnut stain and varnish. Floors natural. These rooms each contain a standard lavatory.

The erection of lower and upper porch facing south, size nine feet by forty feet. Lower porch cement construction and equipped with chairs and lounges.

Back porches and walks cement construction.

Drives stone base and cinder topped.

Water system piped to barns, mill house, poultry house in addition to main building.

Erection of concrete dam makes an artificial lake one hundred feet by two hundred feet, average depth four feet.

An excellent radio outfit sufficient to receive from all stations.

One good type Victrola with one hundred records.

One Delco electric lighting plant, which has been sufficient for our needs so far and which has given good service.

One Ford truck, with which we deliver our milk, does station duty, and carries supplies.

The carrying on of our farm, dairy and fowl industry, which went a little on the red side the first year, but which furnished all products, vegetables, milk, eggs, fruit, and meat, and which, although not developed to the nth power of agriculture, has shown a profit this second year.

Orchards have been renewed and fifty new trees added.

During these two years we have served eight physicians. We have so improved one physician in health that he has been able to return to active practice. Our guests we have served have been deserving and appreciative.

One of the important points I wish to make is this. Every doctor who has been a guest has improved in health in this altitude of 1900 feet. Dr. A. came here a feeble old man, now he steps lively. Dr. B.'s mental trouble was practically cured at The Home. Dr. C. became mentally and physically able to resume his practice. Dr. J. has become able to work and is active where formerly her back was so weak she was able to walk but very little, and let me state right here that this doctor has earned the right to be called the mother physician of The Physicians' Home and should be so recognized by the board.

We have been fortunate in the selection of managers and have now a very worthy manager and matron who are interested in the work. Both are efficient, economical, and above all kind, and home makers.

To run The Home and provide for these two years and to accomplish and pay for the above we have spent approximately $25,000. This represents the allowance from the board and includes the income from the farm products.

Our permanent improvements are finished and we are equipped to serve twenty guests. Our first unit is practical and ready to serve.

This year we will have working with me the officers of our local society, who will meet at regular intervals in the interest of the Home in the hope that we can give increasing service and efficiency to the central board.

While the past two years has been hard on our treasury and our efforts have been toward making a presentable unit, in fact we have been going through the constructive period. Our permanent improvements are finished and we are now ready to run normal.

To do all these things has taken time, patience, money, judgment, and a little bit of courage. The directors have helped greatly in visits and letters of support and guidance and especially in this connection I must mention the good ideas and help rendered by the other members of the House Committee, Dr. Dieffenbach and Dr. Waldo.

To those members of the board who have been behind me one hundred per cent. let me extend my sincere thanks and appreciation. To those who have criticized me, please let me state that I have done my best, that I have no apologies to offer and that I am always ready to give a better man a chance at my job, whom I assure you, will have my best support.

Feeling that there is no greater work that any of us can do than to work for the cause of The Physicians' Home, also knowing that all the profession wants is a personal appeal and request rather than a mail appeal to make our treasury boom (we all know what happens to most of our mail appeals). Let us leave the middle of the stream and "Carry the Message to Garcia."

I want to say that I, as one director, feel it my duty to the cause and to the profession to help make this personal appeal possible and in support of this last statement will say that to start the "pot a-boiling" I will be one of the 250 men who will give $1,000 each to the support of The Physicians' Home Treasury.

STEPHEN V. MOUNTAIN, M.D.

MEDICAL JOURNAL AND RECORD

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Gregory Stragnell, M. D., *Editor*

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NEW YORK, WEDNESDAY, MAY 7, 1924

Medicolegal Notes.

AGREEMENT BY SELLER OF PRACTICE NOT TO PRACTISE, LIMITED AS TO SPACE BUT NOT AS TO TIME, HELD VALID

In an action by one physician against another to restrain the defendant from practising medicine in Schertz, Texas, or within a radius of twenty miles thereof, in violation of a contract reciting that the defendant having sold his property in Schertz and his good will for a valuable consideration to the plaintiff, "agrees not to practice medicine in Schertz or within a radius of twenty miles of Schertz," it appeared that on the sale the defendant "moved and remained away, but he recently returned and began the practice of medicine in Guadalupe County, within the prohibited distance."

The principal feature of this case was that the prohibited territory was limited, but the time was not, and the question was whether the agreement was reasonable or unreasonable.

"Such a contract," said the Texas Court of Civil Appeals, "is not to be regarded as unreasonable, when fairly and openly made, nor in restraint of trade. The good will of a professional man may be as much an asset and a thing to be sold as that of a merchant.

"Whatever the strict rule of the common law may have been in condemning contracts in restraint of trade, such doctrine is much modified in America, and is not ordinarily made to apply to the contracts of professional men, skilled artisans, or purchasers of goods and merchandise, and the good will appertaining thereto, and binding the seller not to engage in the same business for a certain time limit and within a specified radius.

"It is not apparent why it is unlawful for a physician, if he can get any one to purchase his property and his good will, to do so, just as a merchant may do the same thing, and bind the seller not to further engage in the same business within a certain distance or radius.

"We see no reason whatever to hold broadly such a contract void. It is a property right, personal in its nature, and should be left to the liberty and freedom of contract. There is no such public policy involved in it as would require the physician to keep his good will for his own interest or restrain him from abandoning his practice and selling out his estate and good will together. Such a sale is contractual and thereby lawful."

In the case of Wolff v. Hirschfield, 23 Tex. Civ. App., 670, decided by the same court, such a contract where the time limit was fixed at twenty years was held valid.

The court here found no difficulty in agreeing with the trial court that a twenty mile radius is not unreasonable or greater than was necessary to guard the purchaser if he needed such protection in the pursuit of his business or profession. So far as the public was concerned, it was not likely to be hurt by such an agreement, since every other physician or surgeon of equal competency is at liberty to practise the same profession within the same limited territory.

The next question was, did the fact that the seller, the agreement being without time limit, contracted and bound himself never again to practise his profession within that territory render the contract a nullity as against public policy?

The court held that it did not. It said: "If one has the right to make a contract binding himself not to practise his profession for a great number of years, in a large or limited area, why not be allowed to make the same contract permanent, or at least during the life of the purchaser? What interest has the public in a professional man, that would deny to him such liberty of contract." It cited Glover v. Shirley, 169 Mo. App. 637; Davis v. Mason [Eng.], 5 T. R. 118; Presbury v. Fisher, 18 Mo. 50, and Webster v. Williams, 62 Ark., 101, as sustaining the validity of such contracts.

The court deduced from the authorities that contracts of the class under discussion, designated as restraints of trade, are void when unlimited, both as to time and space. They are valid if not unreasonable as to time or space. Here the space was limited, but the time was not.

The seller did not in his pleading attack the agreement on the ground of fraud or mutual mistake. It was a written contract, separately entered into, and the court suggested that the better course is, as a matter of practice, to reduce all such contracts to writing separately, as was done here, and not to burden title papers therewith, in which subsequent purchasers would have no concern. It was clear, however, from the testimony, that the agreement was a part of the consideration of the trade, and merged in the latter contract.

Judgment for the plaintiff was affirmed. Randolph v. Graham (Tex. Civ. App.), 254 S. W., 402.

EVIDENCE OF DEATH OF ANOTHER UNDER ANESTHETIC NOT ADMISSIBLE AS "SIMILAR INSTANCE"

In an action for damages for the death of a ten year old girl, alleged to have been caused by the negligent use of chloroform as an anesthetic while the defendant inserted three stitches in a small wound on the child's right thumb, the defendant's contention was that the death was due to the presence in the body of the deceased of an abnormally enlarged thymus gland.

A medical witness for the defendant was permitted by the trial court to testify to an examination of the body of a thirteen year old girl, who had been brought to a hospital for the removal of enlarged tonsils and adenoids, and to state that her death "was due to syncope under the influence of a general anesthetic administered for surgical purposes in the presence of a fifty gram thymus gland." The Massachusetts Supreme Judicial Court holds, Biancucci v. Nigro, 141 N. E. 568, that the defendant's contention that evidence of this collateral fact was admissible as a "similar instance" could not prevail. The court said: "An inference that the death of the plaintiff's intestate was due to the influence of chloroform in the presence of a thymus gland weighing fifty-one grams, or about one and two thirds ounces, could not properly be drawn from the mere fact that another child, of thirteen years, with a fifty gram thymus gland died from the influence of a general anesthetic administered for surgical purposes. It does not appear that the conditions or circumstances, such as the health of the child, the amount of anesthetic administered, and other conditions affecting the result, were the same in the illustrative case and in the case in hand."

An exception to the evidence was therefore sustained.

CROSS EXAMINATION OF MEDICAL EXPERTS AS TO MEDICAL TREATISES

In a personal injury case objection was made to the questioning of medical experts for the defendant concerning their familiarity with certain treatises, their authority, and as to how the witness' views corresponded with the views therein. The Texas Court of Civil Appeals, Fort Worth & R. G. v. Woodward, 254 S. W. 227, holds that such evidence is permissible on cross-examination of a medical expert testifying for the opposite side "to test the knowledge of the socalled expert and to determine the weight of his testimony."

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The Effects of Removal of Dental Infection on Chronic Gastrointestinal Disorders*

G. REESE SATTERLEE, M.D.

New York

Focal infection as an injurious factor in the human mechanism has been discussed widely and from many angles. Probably because of the incompleteness of the studies forming the basis for certain communications regarding this important form of infection, which the English writers refer to as subinfection or medical sepsis, it has often been discounted or made light of. Complete systemic studies of the foci, especially in their relation to the disorders of the gastrointestinal tract, are essential for a proper recognition and treatment of these conditions. The injurious effects of the dental foci as causative agents in diseases of the heart, joints, kidneys and vessels are now generally recognized, but the farreaching effect of oral infection upon the gastrointestinal tract is frequently underestimated or overlooked. It is true that clinicians have long known that gastritis or gastroenteritis have borne a close relationship to socalled bad teeth, but even this limited knowledge has been casual and not based upon the exact scientific studies which characterize medicine today.

May I emphasize at the beginning that it would be a gross error to ascribe more than their just proportion of the troubles of chronic intestinal invalids to infected teeth alone. A very large percentage of these patients present not only infected teeth but many other areas of streptococcus and colon bacillus infection as well. It is a matter of the greatest importance to all clinicians that the sick individual should be surveyed from the viewpoint of the whole rather than of the separated parts of his anatomy. This viewpoint is beginning to have general recognition and is, I believe, a wholesome reaction against the continuance of the isolated specialization of the past two decades. It implies a much closer bond than has heretofore existed between dentistry and medicine. There occur, therefore, in the cases herewith presented, a few instances only in which infected teeth have constituted the sole findings, and in which thorough eradication of these restricted foci has resulted in satisfactory improvement. In following this synthetic trend toward unification in the differential diagnosis and treatment of chronic invalidism, we have been impressed in a recent study of 1,512 patients, with the following generalizations:

1. That discouragingly persistent poor results were often noted after abdominal operations for ulcer, appendicitis, cholelithiasis, peritoneal adhesions and pelvic conditions, in all of which conscientious postoperative medical care was given, but in which no attention was paid to oral sepsis.

2. That satisfactory and permanent results ensued in the past three years in a similar class of patients in whom all obvious foci, oral and otherwise, had been removed prior to abdominal operation.

3. That in a rapidly growing group of patients, presenting definite classical symptoms of gastric and duodenal ulcer, cholecystitis, gastroenteritis and colitis, these symptoms have subsided after a thorough surgical removal of all obvious foci of infection.

It is not in the province of this paper to discuss the difficult problem of the occasional substitution of the surgical removal of oral and other obvious infections for socalled radical abdominal operations, because there has not yet been time enough to analyze a group. It may well be that such abdominal operations, which in certain instances have been rendered at least temporarily unnecessary, will ultimately be required in order to maintain the full restoration of health. It is not yet understood to what degree oral sepsis is actually the primary factor in cases presenting serious abdominal symptoms; many such symptoms may be the result of referred pain. It is only by continued study and the passage of time that these problems can be solved, and one of the main objects of this paper is to report our findings to date upon this important point.

It is evident that the experimental work of Rosenow, Moody, Henrici, Bumpus, Meissner, Goadby, Thoma, Upson, Hunter and many others on focal infection dovetails more and more closely into our clinical studies as each of these important branches of medicine becomes more advanced. As accuracy and standardization in methods of studying this intricate problem are much to be desired, I would lay especial emphasis upon the following points.

*Read before the Section on Stomatology, American Medical Association, June, 1923.

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SINUS INFECTION

The sinuses of the head most frequently infected among chronic intestinal invalids are the antra. In all cases the acute sinus infections are to be disregarded as outside the present purpose of this study. The antra may present all degrees of chronic infection from an ordinary proliferative change in the mucous membrane to an extensive and highly destructive osteomyelitis of the antral wall. The fact that the long controversy as to the best methods of surgical approach and therapeusis of the antrum is still undecided shows that the matter is not settled. Where this is due to the spread of infection from the diseased area about a tooth, the logical surgical procedure would be to attack the antrum through the alveolar process, as it is obvious that the area of infection must be cleaned up. In our experience the bulk of these chronic antrum infections are of dental origin. While there are many operations and methods of dealing with chronic infected antra, we feel that the first and most necessary procedure is to eliminate the dental infection. While this infection persists, we feel that no form of treatment or operation, however cleverly devised in its mechanical inception, will produce a cure.

My associate, Edward S. Pope, recommends the following sequence of procedure in dealing with infections about the head; First, removal of tonsils; second, removal of teeth; and third, such operations as may be necessary for drainage or direct treatment of the sinuses, a reasonable interval being allowed between the steps. If the tonsils are infected there is bound to be a continuous flow of germ laden air from the nasal passages and sinuses on sneezing, blowing the nose forcibly or coughing, and infection may be forced to the furthermost areas. An illustration of this is seen in the acute middle ear conditions so often arising from this cause.

PATHOLOGICAL STUDIES

The conditions usually encountered in and about the teeth are abscesses, granulomata, apical absorptions, cysts, pericemental and alveolar absorptions, pyorrhea pockets, and osteomyelitic areas. The most frequent lesion of the sac type found in our experience is the cyst. This probably originates from an acute abscess which has not been drained or from a chronic abscess verging into a granuloma and finally becoming cystic. The evidence of these lesions is shown most effectively by the x ray. Many teeth appearing normal under the physical tests show degeneration on the films. It is necessary, therefore, to have a complete x ray study of all the teeth. Apical absorption is frequently the only evidence of infection and these teeth should be extracted. The argument is frequently advanced that all these conditions may be present without symptoms, either general or oral, and that, therefore, they should be disregarded. This, however, is not a logical stand, for we have observed many patients in whom these conditions have existed for years before definite recent symptoms, proven to be due to them, have occurred.

Teeth that have been devitalized, either by accident or by election, are somewhat loosely spoken of as dead teeth. Undoubtedly the technic of removing nerves from the root canals, followed by filling, has led to many serious infections. It is equally probable that socalled dead teeth may exist without infection, but as the devitalized tooth has become to a large degree a foreign body, liability to infection is always present and increased. If such teeth are not extracted they should at least be watched carefully and x rayed every six months. In our experience we have found that the hollow metal crowns and Richmond crowns and pivots nearly always harbor serious infection.

SYMPTOMATOLOGY

Absence of pain is the most important clinical phenomenon. It is characteristic of streptococcus infection. Its importance cannot be overestimated. Draper has discussed this in detail. Discomfort may be present but actual pain, if present, is almost certainly to be an indication of a mixed infection. Another indication is the frequency of a peculiar metallic taste which may be caused by the action of the bacteria or their products upon metal.

Both from a clinical and cultural viewpoint the question of the removal of teeth presenting mild grades of infection is an important one. We believe that it should not be decided by the dentist alone or by the internist alone but by evidence based upon their respective findings. The systemic condition of the patient affords invaluable aid in reaching a decision.

Recognition and appreciation should be given to all the members of our group for their cooperation in the accomplishment of these clinical studies. These men are John W. Draper, Edward S. Pope, Redford K. Johnson and Ferdearle Fischer. Daniel E. Drake has been of great assistance in the care and follow up of the patients in his sanitarium. The cases contributed by Dr. Drake have been labelled with the letter D.

RESULTS OF BACTERIAL CULTURES

CULTURES FROM APICES OF 133 EXTRACTED TEETH

Streptococcus mitis.....	65	Streptococcus pyogenes..	8
Streptococcus salivarius.	56	Streptococcus equinus...	6
Streptococcus anginosus.	24	Staphylococcus albus....	23
Streptococcus fecalis....	11	Staphylococcus aureus...	5

CULTURES FROM NECROTIC BONE AREAS

Streptococcus mitis.....	13	Streptococcus pyogenes..	3
Streptococcus salivarius.	9	Streptococcus fecalis....	1
Streptococcus anginosus.	6	Staphylococcus albus....	8
Streptococcus equinus...	2	Staphylococcus aureus...	1

CULTURES FROM ANTRA DIRECTLY ON OPENING THROUGH MOUTH

Streptococcus mitis.....	14	Staphylococcus albus....	21
Streptococcus salivarius.	10	Staphylococcus aureus...	3
Streptococcus anginosus.	4	Mucosus capsulatus.....	1
Streptococcus pyogenes..	5		

The bacteria have been cultured and differentiated according to Holman's method. Of the streptococci, the Streptococcus anginosus and pyogenes are of the pathogenic hemolytic type, the others, mitis, salivarius, fecalis, and equinus are nonhemolytic. As a rule, when the hemolytic organisms were recovered the patient was distinctly ill.

CULTURES FROM INTERIOR OF EIGHTEEN TONSILS AFTER TONSILLECTOMY

Streptococcus mitis.....	13	Streptococcus fecalis....	4
Streptococcus anginosus.	13	Streptococcus pyogenes..	1
Streptococcus salivarius.	4	Staphylococcus aureus...	12
Streptococcus equinus...	3	Bac. pyocyaneus	1

TWENTY-ONE CULTURES FROM CERVIX UTERI

Bacillus acidi lactici	5	Streptococcus fecalis	3
Bacillus neapolitanus	3	Streptococcus mitis	2
Bacillus coli	2	Streptococcus salivarius	2
Staphylococcus	10	Streptococcus anginosus	1

It is of interest to note the appearance of the colon bacillus in this region and its absence in the tonsil.

NINETY-FOUR CULTURES FROM THE FECES

Bacillus acidi lactici	34	Bacillus Morgani	1
Bacillus neapolitanus	35	Streptococcus fecalis	14
Bacillus communior	31	Streptococcus mitis	7
Bacillus coli	25	Pyocyaneus	2
Bacillus dysenteriæ	5		

SUMMARY OF CASE HISTORIES

It is to be noted in a series of seventy-two cases that whatever the diagnosis might be the lesions and the nature of the infection are similar.

It is often extremely difficult to classify these cases according to diagnosis, because a lesion in one part of the body is frequently succeeded or accompanied by another in a different locality and the classic diagnosis is ruined.

The cases are divided into groups according to the chief symptomatology. It can be seen, however, that a toxic neurasthenic can be readily transformed into a chronic intestinal invalid, a psychotic, an epileptic or a cardiorenal case upon the slightest provocation. Frequently the symptoms of the nervous system are uppermost when the chief lesion is in the gastrointestinal tract.

No cases have been included in the table that have not had a thorough examination and treatment and a follow up of one year by personal contact. Unfavorable cases have been included and the reasons for failure explained as far as possible.

The treatment of all these cases has been along the same lines—the gradual removal of all foci and medical therapy aided by enteroantigen and serum.

Some of the apparently hopeless cases, such as advanced arthritis, toxic neurasthenia, hemicrania and cardiorenal cases, have been remarkably improved after the removal of foci.

In Case No. 4383 the patient had had two abdominal operations for perigastric adhesions, hour glass stomach, with persistent abdominal pain. The cause of this pain, which was a referred pain, originated from a dental infection. The pain was not relieved until five years after the last laparotomy when the dental infection was discovered and removed.

Head infections.—Where the sinus infections have progressed to a chronic pansinusitis, the prognosis is usually bad, as in cases 5042 and 4467.

Arthritis.—Three cases of arthritis, Nos. 3762, 4561 and 4867, were very far advanced but the joint infection was controlled by these methods.

Tertiary syphilis.—Cases 4277 and 4448 illustrate the benefit of the removal of foci in tertiary syphilis. Case No. 4277 was of syphilitic myocarditis, hepatitis and nephritis, which made some improvement under antisyphilitic treatment but did not show lasting benefit until the dental infection was removed.

Epilepsy and syphilis.—No. 4448, a case of epilepsy, showed no improvement of the epileptic condition under antisyphilitic treatment but the patient recovered after resection of the entire colon and removal of oral foci.

Blindness.—Case 3987 merits special notice. All the patient's teeth had been extracted thirty years ago. There were progressive iridocyclitis and secondary glaucoma, with almost total loss of vision, and there were also undoubted signs of cholecystitis. Osteomyelitic areas in the superior maxillæ with diseased antra were thoroughly curetted and a permanent result in improved vision and cessation of abdominal symptoms obtained.

Hemicrania.—These cases may give even more spectacular results than are shown on the chart. The symptoms are evidently due to the toxemia from focal infection and usually the colon is badly diseased, so that colectomy may be indicated.

Cardiac arrhythmia.—Cardiac irregularities, with or without fibrillation, are usually benefited by the removal of foci. One case only is reported, but this condition may appear at any time in other instances.

Asthma.—The early recognition of gastrointestinal asthma is imperative, because the changes in the bronchial tract may become permanent. Three cases with satisfactory results are recorded.

Toxic psychosis.—The results in the seven cases reported are very satisfactory, but the prognosis is not so good when the condition has lasted over three years. Prepsychosis, dementia precox and manic depressive insanity are illustrated. Sudden acute mania shows the most satisfactory results.

Arteriosclerosis.—As arterial changes are indicative of advanced infection, these cases should be treated early.

Gastric and duodenal ulcers and cholecystitis.—These conditions need surgically clean mouths, as illustrated by the improvement in three cases of duodenal ulcer and two of cholecystitis. Many of the patients have undoubtedly had cholecystitis but were not classified under this heading.

Toxic nephritis.—Cases No. 4056, 4801 and 4178 show severe nephritis with hematuria, the most prominent symptom. Pure cultures of the colon bacillus were obtained from the urine by ureteral catheterization. As hematuria was the most pronounced symptom a hemolytic streptococcus infection of the kidney with a secondary implantation of the colon bacillus was considered most likely. All three of these patients responded well to surgical removal of foci and enteroantigen therapy.

Nephrectomy was necessary in one case on account of urinary suppression on one side and pure blood in the ureter.

SUMMARY

1. All conditions classified as chronic intestinal invalidism need an exhaustive study for medical infection, otherwise known as focal infection.

2. Mouth infection, if not the primary source, is the most frequent and important seat of infection.

3. No one focus can be considered alone but the whole body carefully examined for obvious foci.

4. Complete surgical eradication of minor foci before major abdominal surgery is considered; if impracticable, postoperative removal of these foci.

5. The importance of bacterial studies and treatment by enteroantigens.

6. Our aim should be prevention, therefore removal of all foci, however small, before permanent changes in other parts of the body may occur.

CHRONIC INTESTINAL INVALIDISM

Case No.	Sex	Age	Complaint	Duration Years	Lesion	Treatment	Result	Remarks
6499	F	41	Painful hemorrhoids; constipation	1	Infected hemorrhoids; infected cervix and cysts; infected teeth, granuloma; previous appendectomy.	Surgical removal of all foci.	Recovery	
4383	F	37	Perigastric adhesions; hour glass stomach; pericolic adhesions; epigastric pain	7	Hour glass stomach and pericolic adhesions; infected and impacted teeth; chronic maxillary sinusitis; ethmoiditis; infected tonsils; cervicitis.	First operations severing adhesions; 5 years later surgical removal of foci except cervix.	Improvement	Cervix not enucleated. Pain not relieved until oral foci removed.
4653	M	61	Chronic intestinal invalidism with ocular symptoms and hemorrhoids	16	Infected teeth, granuloma; chronic maxillary sinusitis with polypi; necrosis; pericolic adhesions and reduplication of left side and stasis.	Surgical removal of oral foci.	Recovery	Abdominal operation seemed inevitable at first, prolonged case, excellent result.
4281	M	28	Toxic neurasthenia		Pericolic adhesions and stasis; infected teeth and antra; osteomyelitis.	Medical treatment vaccines; resection of colon; later, surgical removal of oral foci.	Recovery	Three years period between colectomy and surgical removal of oral foci. Patient says latter gave him most benefit.
D-5262	F	34	Acute appendicitis with gastric irritability with vomiting	7	Acute appendicitis; spasmodic contractions of stomach with two gastroenterostomies; infected tonsils; infected teeth; perinephritic abscess; chronic maxillary sinusitis.	Appendectomy; gastroenterostomy, 1; gastroenterostomy, 2; tonsillectomy; surgical removal of dental infection; perinephritis abscess drained; operation for maxillary sinusitis.	Very marked improvement	No permanent relief from operation until extraction of infected teeth and opening of antrum, then immediate and steady.
4371	M	49	Dysentery, bloody stools and gas	20	Dilated colon; pericolic adhesions; infected teeth; chronic maxillary sinusitis.	Surgical extraction; surgical removal of foci; vaccines.	Marked improvement	Principal complaint of flatulence relieved; bowels all right.

HEMICRANIA

3789	F	44	Hemicrania; constipation.	17	Cecal colon stasis one hundred hours; cecum mobile; later, infected teeth, chronic maxillary sinusitis; infected tonsils.	Resection of ceco-colon; surgical removal of local foci; vaccines.	Recovery	Recovery not complete until removal of focal infection.
5084	F	36	Hemicrania and constipation	7	Infected teeth, infected tonsils and colon; pericolic adhesions.	Surgical removal of foci (teeth and tonsils); serum treatment; partial resection of colon.	Recovery	
4898	F	38	Hemicrania; constipation; neurasthenia	30	Appendicitis; infected tonsils; painful coccyx; infected cervix; ulcer of rectum; infected teeth; chronic maxillary sinusitis.	Appendectomy; tonsillectomy; removal of coccyx; enucleation of cervix; surgical removal of teeth; surgical removal of antral infection.	Recovery	No permanent result until infection in cervix and mouth were removed.
4941	M	42	Hemicrania; constipation	5	Infected tonsils; infected teeth and cyst; alveolar absorption.	Surgical removal of foci (teeth and tonsils).	Recovery	Marked improvement in constipation.

ASTHMA

4207	F	39	Asthma and constipation; chronic intestinal invalidism.	10	Infected tonsils; hemorrhoids; pericolitis and stasis.	Surgical removal of foci (tonsils and hemorrhoids); colon strep. vaccines and serum.	Marked improvement	
4363	F	70	Asthma	50	Chronic appendicitis with pericolic membranitis.	Appendectomy and separation of bands.	Marked improvement	Intervals of remission.
D-5146	M	12	Asthma	11	Chronic appendicitis.	Removal of gangrenous appendix.	Marked improvement	Fulminating ganglion appendix; oblige operation which had been refused several times.

TOXIC NEURASTHENIA

3746	M	48	Toxic neurasthenia.	1	Retained filling after extraction of molar; apical absorption of one tooth.	Surgical removal of one focus of retained filling.	Recovery	No other treatment.
4548	F	30	Toxic neurasthenia; intestinal invalidism.	20	Enteroptosis; infected teeth; infected tonsils.	Surgical extraction of infected teeth and removal of tonsils. Medical treatment (support and posture, vaccines).	Partial recovery	
4594	F	32	Toxic neurasthenia; intestinal invalidism.	3	Infected teeth and tonsils; hemorrhoids and proctitis.	Removal of infected foci; abdominal support, posture, diet and colon vaccines.	Recovery	
3954	M	38	Toxic delirium and neurasthenia.	3	Infected teeth, chronic maxillary sinusitis; infected tonsils; duodenal ulcer.	Surgical removal of foci; serum and vaccines.	Slow recovery	Marked cutaneous hyperemias and urticaria; slow but good result.
3942	F	48	Toxic neurasthenia; intestinal invalidism.	7	Chronic appendicitis; infected teeth; chronic maxillary sinusitis; proctitis.	Surgical removal of foci; appendectomy.	Recovery	One year later acute nephritis and recovery.
4296	F	45	Toxic neurasthenia.	2	Infected teeth; chronic maxillary sinusitis; proctitis.	Surgical removal of foci, especially antrum; later tonsillectomy.	Slow recovery	Tonsils appeared normal but showed small deep seated abscess.

Case No.	Sex	Age	Complaint	Duration Years	Lesion	Treatment	Result	Remarks
					TOXIC PSYCHOSIS			
3817	M	30	Mental instability; dementia precox	5	Infected teeth and tonsils; infected colon; pericolic adhesions.	Removal of foci; partial resection of colon.	Improvement.	Testicular implants.
4490	F	33	Toxic psychosis	10	Previous appendectomy; multiple foci; ovaries; cervix, hemorrhoids; infected colon.	Surgical removal of all foci; total colectomy.	Complete recovery	One year after.
D-3976	F	24	Prepsychosis	1	Enteroptosis; infected teeth; hemorrhoids; infected cervix; chronic maxillary sinusitis.	Surgical removal of all foci.	Recovery	Infected cervix in young girl; no results until antrum operation.
D-5073	F	38	Acute mania	7	Infected teeth, cervix and tonsils; chronic maxillary sinusitis and impacted molar.	Surgical removal of all foci.	Recovery	Condition fine six months after.
D-4270	M	8	Dementia precox early.	6	Infected colon and tonsils; intestinal stasis.	Tonsillectomy; partial colectomy.	Recovery	Incorrigibly suicidal and homicidal; constipated from birth. Honor boy at high school.
D-3892	M	49	Manic depressive insanity	4	Infected tonsils; chronic maxillary sinusitis.	Tonsillectomy; surgical removal of mouth foci.	Recovery	No improvement from tonsillectomy but recovery complete after operation on antrum.
					ULCERS			
4466	M	43	Duodenal ulcer; appendicitis	2	Duodenal ulcer; subacute appendicitis; infected teeth, impacted wisdom tooth; chronic maxillary sinusitis.	Appendectomy and gastroenterostomy; later surgical removal of foci.	Recovery	Recovery not complete until after dental extraction.
4092	M	39	Duodenal ulcer; appendicitis.	15	Duodenal ulcer and appendicitis; previous dental extraction; intestinal stasis.	Gastroenterostomy and appendectomy; diet and vaccines.	Recovery	Good results aided by previous removal of oral infection.
4173	M	52	Duodenal ulcer	18	Duodenal ulcer and diverticulum; infected teeth.	Gastroenterostomy; later surgical removal of oral foci.	Recovery	
					CHOLECYSTITIS			
3934	M	53	Cholecystitis	4	Cholecystitis, jaundice; infected teeth; infected tonsils; chronic maxillary sinusitis.	Surgical removal of oral foci-colon vaccines.	Recovery	Excellent condition two years later.
5042	F	46	Cholecystitis; constipation; headache.	6	Cholecystitis, jaundice; infected teeth; necrosis; chronic maxillary sinusitis; proctitis; pansinusitis.	Surgical removal of all foci; cholecystectomy.	Slight improvement	Incurable invalid.
					KIDNEY CASES			
4056	M	61	Hematuria	20	Hematuria, both kidneys (colon bacillus infection); infected teeth; chronic maxillary sinusitis.	Surgical removal of foci; colon vaccines.	Marked improvement	Hematuria ceased almost immediately; recurred, but controlled by colon vaccines.
4801	M	45	Septic fever; colon infection of kidney.	3	Pyelonephrosis; pure culture of Bacillus communior in urine; infected tonsils and teeth; chronic maxillary sinusitis.	Medical, cystogen; serum and vaccines; surgical removal of foci.	Recovery	Hematuria occurred temporarily after removal of teeth and tonsils.
4178	F	47	Hematuria	1	Multiple abscesses of kidney; hemorrhagic nephritis; infected teeth; chronic maxillary sinusitis.	Previous surgical removal of mouth infection; nephrectomy; vaccines.	Recovery	Bacillus coli still present in urine one and one half years after; no symptoms.
					MISCELLANEOUS			
4277	M	41	Syphilitic heart and liver. Aortic lesion.	7	Syphilitic myocarditis; hepatitis; infected teeth; chronic maxillary sinusitis; infected tonsils.	Antisyphilitic, five years; then surgical removal of foci—teeth and tonsils.	Marked improvement	Wassermann four plus continually in spite of antisyphilitic treatment; reduced to one plus after removal of infected foci.
4069	F	18	Toxic cardiac arrhythmia.	3	Irregular heart (no organic lesion); dilated cecocolon; infected and impacted teeth; infected tonsils.	Removal of foci; colon vaccines.	Improved	
3836	M	46	Cardiospasm	7	Infected teeth; supernumerary tooth; chronic maxillary sinusitis; osteomyelitis.	Surgical removal of infected foci.	Recovery	
3953	F	59	High blood pressure.	2	Infected teeth; nonerupted molars; chronic maxillary sinusitis and polypi; intestinal stasis.	Surgical removal of foci; diet.	Recovery	Blood pressure became normal.
4477	F	43	High blood pressure; retinal hemorrhages.	7	Infected teeth; infected tonsils.	Removal of tonsils—not of dental foci.	Marked improvement	Previous medical treatment of no avail; blood pressure and symptoms relieved.
4009	F	23	Blindness; goitre	2	Infected teeth; retinal hemorrhages; chronic infected tooth; medical nephritis; infected tonsils.	Surgical extraction of treatment.	No improvement; death	Advanced case.

Myocardial Insufficiency as a Primary Factor in the Causation of an Asthma Complex*

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The purpose of this communication is to bring to the fore and emphasize a symptom complex which I have termed primary myocardial insufficiency asthma complex and which I believe is an important clinical entity. The early as well as the late stages of this complex, especially the asthmatic state have in my experience been readily mistaken for other diseases. I therefore feel that any observation that will aid in the recognition of this syndrome is worthy of record.

In a review of sixty-two patients with asthma, twenty of whom were over forty and the remainder over fifty years of age, careful studies were made to determine the etiology. Of the total number, fourteen sought relief from asthma in spite of repeated failures to get relief from various medical and other forms of prescribed treatment. These fourteen cases fell into the category of primary myocardial insufficiency asthma. Some of these fourteen patients have been tested thoroughly by the scratch and intradermic methods to determine possible protein sensitization. Personally I consider these attempts futile and unnecessary, because protein sensitization does not enter as an etiological factor in the causation of this symptom complex.

It is surprising how frequently, in patients suffering from asthmatic symptoms, the direct connection between these symptoms and various forms of cardiac disease is overlooked. In some cases of bronchial asthma or asthmatic bronchitis of sufficiently long standing a myocardial insufficiency develops and is directly due to the heart strain induced by the primary condition. Our subject, however, deals with a myocardial insufficiency in which the asthmatic symptoms are secondary. In the advanced stage of this condition, cardiac failure is obvious and is then easily mistaken for the socalled cardiac asthma which as will be shown later, is an altogether distinct and different clinical entity. It is essential to know whether or not the myocardial insufficiency is primary or is secondary to the asthma, for the management and prognosis of the case is entirely different in these two conditions.

Myocardial insufficiency is a common condition but unfortunately it is not commonly recognized in its early stages. The importance of this fact has been recognized by many cardiologists and has been stressed recently in their writings.

Greene (1) maintains that failure to appreciate the large proportion of deficient hearts is common. This type of heart though diseased is not the seat of endocarditis or of frankly expressed myocardial inflammation or degeneration; its signs and symptoms are wholly or relatively silent. There is also "a general failure to recognize subjective symptoms of persisting myocardial inadequacy and reserve impairment such as constitute a most important factor of evidence of this condition when existing in its minor but vital degrees."

Thayer (2) and Wiggers (3) hold that a diagnosis of early myocardial insufficiency may be made before anything abnormal can be detected on examination of the heart and a positive diagnosis of cardiac disease may be made from the history alone, based on a careful study of the sensations of patient, on the relation of one symptom to another, and on the gradual increase and severity of the symptoms.

If one glances through authorative textbooks, valvular diseases are described in minute detail, but as Christian (4) states, "there rarely appears a clear description of a common cardiac disorder in which the fault is primarily in the muscle and the valves themselves are normal. In just the same way the textbooks of pathology fail to give any definite satisfactory description of this common type of cardiac lesion, probably because very often the heart muscle and the coronary system present no lesion that the pathologist can describe in objective terms."

It is to the great credit of Sir James Mackenzie who was one of the first, if not the first, to advocate the study of cardiac disease by learning something of its early symptoms before physical signs become apparent. He has taken great pains to point out the importance of going into the minute details of the patient's recollection of the onset of his condition. Mackenzie (5) states that "if one takes any of the chronic diseases and ask what we know about their onset and early symptoms, we will find that there is in our knowledge a great defect. From this point of view the symptoms present in the early stages have been practically neglected. Often the secondary symptoms are so prominent that the patient's complaint is likely to be labelled by the most prominent symptoms of the late stage."

Neuhof (6) in a chapter dealing with decompensation states the subject succinctly by remarking that "when cough is due to bronchial congestion, the physical signs are the usual ones of bronchitis. In addition, rather marked sibilant breathing may be present, thus resembling bronchial asthma. The wheezing inspiration, however, is probably caused by the bronchial congestion and mucus in the bronchial tree and not from any anaphylactic reaction."

In dealing with the difficult problem of asthma with its various and multitudinous causes, the percentage of therapeutic failure is unfortunately large, in spite of the vast progress made during the past decade. Of the failures the largest number occurs in patients past fifty years of age. Early myocardial insufficiency as a primary cause of asthma directly affects these cases and its recognition will in a large measure reduce our percentage of failures.

ETIOLOGY

The etiology of primary myocardial insufficiency asthma is essentially that of chronic myocarditis with decompensation.

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An intercurrent illness hastens the progress of the disease so that the asthmatic symptoms may first make their appearance during convalescence or soon after the usual activities are resumed.

It must be emphasized, however, that the existence of a myocarditis in itself does not predicate asthma.

SUBJECTIVE SYMPTOMS

Perhaps no organ of the body gives better subjective evidence of its functional integrity or impairment than the heart. In primary myocardial insufficiency asthma there is a group of subjective symptoms, the recognition of which is essential to an early diagnosis of this condition. Before asthmatic symptoms become evident, a careful history will elicit symptoms of beginning myocardial insufficiency. These are so subtle and so slight that they are likely to be overlooked or to be considered of relatively little importance. The patient at first notices that he becomes somewhat fatigued or slightly short of breath after some customary exertion which had not affected him previously; and if the patient persists in his exertions, the tendency to fatigue and breathlessness is increased, until finally his exhaustion does not respond as readily to rest as formerly. The rapidity with which these symptoms become sufficiently pronounced to demand attention on the part of the patient depends upon his occupation, temperament, environment and economic condition.

When the condition becomes more advanced, cough is an important factor. It is at first hard, hacking and unproductive, and is most troublesome towards the end of the day, more noticeable if the patient has been active. The cough is usually mistaken for a mild bronchitis. At first the cough will be relieved simply with rest. Later, the cough becomes aggravated and a feeling of tightness in the chest develops, usually accompanied by wheezing. Sleep becomes disturbed. The heart reserve is more and more encroached upon and finally fully developed asthmatic attacks result. The attacks come at irregular intervals, depending upon the degree and the period of myocardial exhaustion. Secondary infection takes place resulting in a subacute productive bronchitis which adds to the respiratory embarrassment. During this early stage the condition resembles bronchial asthma. Later, the cardiac reserve is completely exhausted and the rest force of the heart is encroached upon. The asthmatic symptoms become continuous. Sleep is possible for only short periods at a time, weakness and asthenia are marked. A vicious circle is established which further encroaches upon the rest force of the heart. Precordial pain may be complained of, at times characteristic of true angina pectoris.

Comparatively early in the course of the disease, edema of the ankles appears at the end of the day. It may be so slight as to escape attention. In advanced cardiac failure the degrees of edema though variable is always present.

In the late stages due to passive congestion of the viscera patients may complain of digestive disturbances and various epigastric and abdominal pains.

OBJECTIVE SYMPTOMS

When the patient first seeks advice he comes for the relief of his asthma. He has no suspicion of heart trouble nor does the physician suspect it. The slight heart signs that may be present are easily mistaken for secondary factors attributable to the patient's asthmatic state. Early in the disease a positive diagnosis from the physical signs alone can not be made with certainty. The overshadowing picture is that of asthma. In this early stage, the respiratory rate is usually slightly increased. When bronchial infection is absent, auscultation will reveal sibilant and sonorous râles, a few ronchi and perhaps a few crepitant râles at the bases of the lungs. These signs are found usually with both inspiration and expiration. Towards the end of the day the râles may be more numerous, respiration more labored, slight pallor or even cyanosis may be present.

On examination of the heart there may be or may not be some enlargement. The sounds lack normal muscular quality. The apex beat is soft and less forceful than normal. In this stage a murmur is not usually found. The pulse rate is always increased. This increased rate is particularly noticeable after rest. The range is usually from 80 to 90 a minute. Indeed, it may be said that a persistently elevated pulse rate which does not slow down after rest in an individual past middle age with onset of asthmatic symptoms as described, is almost pathognomonic of primary myocardial insufficiency asthma. In the early stages the pulse is regular and with the exception of the increased rate is practically normal. Upon exertion, recovery from the increased rate is much more delayed than normal.

As failure of the circulation progresses, the asthmatic symptoms become more pronounced and continuous. Complicating bronchitis and emphysema are always present. Crepitant râles are now persistent at the bases and are irregularly distributed throughout the lungs, particularly during the exacerbations of severe asthmatic attacks. Respiration is rapid, shallow and labored even at rest. Wheezing and respiratory oppression are continuous. Cyanosis may become so marked as to be of immediate concern.

During this advanced stage the heart, by percussion, is usually found to be enlarged first to the left and later to the right of the midline. A distinct systolic murmur at the apex is common. The murmur may or may not be transmitted to the axilla. The pulse rate is persistently increased, usually 120 or more beats a minute. There may be marked arrhythmia due to extrasystoles or auricular fibrillation. In this stage the picture of cardiac failure is obvious and is then mistaken for socalled cardiac asthma.

In this series of cases the degree of apparent and visible arteriosclerosis found was not more than to be expected for the age of the individual. Normal blood pressure or hypotension is the rule.

CARDIAC EFFICIENCY TESTS

Various methods have been proposed for determining cardiac function. But, Brittingham and White (7), Ulrich and Nathanson (8), among others, have reached the conclusion that there is at present no definite standard to determine myocardial insufficiency.

Peabody (9) and others have shown the correlation of cardiac dyspnea and vital capacity. In this

test the heart is studied as it expresses its balance or disbalance by physical changes brought about in the lungs. However, in cases of primary myocardial insufficiency asthma, especially in the presence of a complicating bronchitis and other lung changes, the vital capacity test becomes of doubtful value since these conditions muffle the interpretation of the vital lung capacity.

The electrocardiogram also is not an exact test for cardiac function. The information derived from it may be misleading for although certain changes (10) in certain leads may indicate a damaged heart muscle, it does not necessarily mean that there is impaired heart function or vice versa.

After all in early myocardial insufficiency, the most dependable means at our command to estimate cardiac function is a very careful investigation of the patient's history and symptoms.

DIFFERENTIAL DIAGNOSIS

Since primary myocardial insufficiency asthma has usually its onset past middle age, the diseases from which it must be differentiated are comparatively limited to certain types of asthma or conditions simulating asthma.

A typical picture of early primary myocardial insufficiency asthma is as follows: an insidiously progressive fatigue, dyspnea, cough, respiratory oppression, wheezing, ending in asthmatic attacks; nothing much evident upon physical examination except the typical asthma lung signs and a persistently increased pulse rate. The injection of epinephrin hydrochloride gives no relief. The administration of adequate doses of digitalis controls the cases so markedly that it is to a certain extent diagnostic.

In asthmatic bronchitis there is a definite history of acute or subacute respiratory infections before asthmatic symptoms make their appearance. These cases are protein nonsensitive. With onset over forty, the subjective symptoms characteristic of cardiac impairment are absent. The pulse rate is not increased during the intervals of freedom from asthma. The cardiac response to effort is good. When complicated by a secondary myocardial insufficiency and the circulation is restored, the asthmatic symptoms are lessened but not entirely relieved. Temporary relief is usually induced by injection of epinephrin hydrochloride.

Bronchial asthma with onset in a patient past forty, exhibiting protein sensitization, is uncommon. Walker (11), for example, found no case sensitive with onset after fifty. In the presence of sensitization, asthmatic attacks are closely associated with environment. A careful history can easily detect this type of asthma which is almost always caused by the inhalant group of proteins.

Hypertrophic emphysema with symptoms of secondary myocardial insufficiency complicated by bronchiectasis may produce symptoms simulating asthma. In these cases there is a previous history of chronic bronchitis with onset prior to the age of forty.

Advanced primary myocardial insufficiency asthma may be mistaken for cardiac asthma, which is at present a loose term applied to various conditions. Cardiac asthma applies to the type of nocturnal paroxysmal dyspnea which is easily recognized in the typical respiratory distress that comes on suddenly with great severity and presents a clear cut picture. The patient may retire feeling well and after three or four hours' sleep he is suddenly awakened with a feeling of suffocation and is forced to sit up in bed. The duration of the attack is variable from a few minutes to several or more hours. After the attack is relieved he retires to bed and sleeps until morning. Once these attacks begin they usually continue. The class of case that shows this condition is one suffering from arterial and coronary sclerosis. They have high blood pressure for which they have been under treatment for some time prior to the onset of the asthmatic attacks. The heart is always hypertrophied and there is an associated nephropathy. Treatment does not bring about gratifying results, perhaps on account of the profound organic changes complicating or causing the cardiac embarrassment.

In the asthma of renal disease there are albumin and casts in the urine; the heart is hypertrophied, there is high blood pressure. Uremic asthma is in fact a cardiac asthma and does not present any special peculiarities.

Chronic unresolved pneumonia resulting in asthmatic symptoms can be differentiated by a definite history of acute pneumonia, grippe or influenza infection. When the history is vague röntgenoscopy of the chest will aid materially.

The differentiation from tuberculosis depends upon several factors. In the active state there always is an evening rise of temperature. If the process is walled off fever may not be present. Hemoptysis may occur. Signs of cavitation not in close proximity to a bronchus will favor the diagnosis of tuberculosis. The presence of tubercle bacilli is of course pathognomonic. Röntgenoscopy may give important aid.

A patient with syphilis of the lungs giving rise to asthmatic symptoms may give a history of primary or secondary lesions. A sputum persistently negative for tubercle bacilli calls for a Wassermann test. Röntgen ray examination of the lungs will often suggest syphilis.

Foreign bodies or new growths in the larynx, trachea or bronchus, may give rise to a cough and asthmatic symptoms. A laryngoscopic, bronchoscopic and x ray examination will point to the local condition. A positive history of swallowing a foreign body is of help while a negative one does not necessarily exclude foreign body (12).

Compression of the bronchi or trachea by enlarged glands, aneurysm or mediastinal growths give rise to a characteristic wheeze. A high pitched note is heard over the trachea. A brassy cough is characteristic of tracheal pressure. There is a dullness over the bronchi or trachea. In aortic aneurysm the early and common symptom of pain with subsequent expansile pulsation, abnormal dullness and systolic bruit with perhaps inequality of the radial pulses, tracheal tugging and pressure symptoms on the recurrent laryngeal nerve will serve as differential points. Fluoroscopy and röntgenoscopy will show a shadow under the sternum.

Neuhof (13) has described a type of bronchial asthma due to reflexes emanating from a diseased dilated aorta. Rarely, the size of the aorta may be

normal. The symptoms and signs characteristic of primary myocardial insufficiency asthma are lacking, the outstanding physical finding is that of an aortitis. Where the latter is of luetic origin, specific treatment may bring relief of the asthma.

New growths of the lung may simulate asthma. They are secondary to a growth somewhere in the body, rarely primary. Depending upon the location of the tumor the signs will vary. There may be signs of compression of the vessels at the root of the neck and the trachea or bronchi. There is dullness, at times not continuous over the affected area. As it invades the pleura there is effusion.

TREATMENT

The treatment of primary myocardial insufficiency asthma is as a rule satisfactory. It consists mainly of diet, rest and digitalis.

Digitalis is just as efficient in this condition when the heart beat is regular as it is when auricular fibrillation is present. It is important that a standard potent tincture or other reliable preparation of digitalis be used. To get the desired results, digitalis must be given in adequate doses. The maximum therapeutic effect should be obtained without upsetting the patient. It is of interest to note that relief from the distressing asthmatic symptoms is often experienced before an adequate digitalis effect is obtained and before it has effected a material reduction in the pulse rate. If the drug is discontinued and activity resumed at this time, a return of the asthmatic and other symptoms quickly ensues. However, after a normal pulse rate is established and maintained in the early cases, such symptoms as cough, dyspnea and restlessness are entirely eliminated. In cases that come for treatment in the late stage of the disease when chronic bronchitis and emphysema are already established, the cough will still remain though the patient sleeps well. The fatigue will be markedly relieved although a sense of weakness may persist for some time. Treatment directed to the bronchitis will also give relief.

Rest is of extreme importance. Depending upon the degree of myocardial insufficiency present, rest should be absolute or relative. Rest alone at times may replace digitalis in the early cases. Ambulant patients must be given detailed instructions as to what is expected of them. A great deal of attention must be paid to saving the heart from strain. It must be emphasized that the prevention of heart strain depends upon the patient entirely and that without his cooperation, treatment by drugs alone will be of no avail.

The regulation of diet, fluid and salt intake, is similar to that for cardiac diseases in general.

The use of epinephrin hydrochloride is contraindicated. It has been known to cause sudden death in cases of asthma with myocardial insufficiency. It does not cause relief of the asthmatic symptoms secondary to a myocardial insufficiency.

Vigorous catharsis must not be resorted to. Morphine should be restricted to a minimum if not almost entirely eliminated.

Oxygen inhalations properly administered and vigorously pushed proved life saving in the advanced heart failures before an adequate digitalis effect could be obtained.

Where a change of climate has benefited an occasional patient, a definite history of prolonged inactivity could always be elicited and considered accountable for the improvement.

Adams (14) reported a series of fifteen ambulant patients from forty-two to sixty-four years old, suffering with nocturnal paroxysmal asthma, treated with desiccated thyroid gland. Classified clinically, four patients had myocarditis, six aortic disease and five arteriosclerosis. It is of interest to note that three of the four unimproved patients were of the myocardial group, with a pulse rate of 80 before treatment was begun and that they reacted badly to thyroid gland therapy. In connection with this point I may add that some of my patients before coming to me had been treated with pluriglandular extracts because of their asthenia, low blood pressure and the fatigue syndrome, without the slightest relief.

Relapses are inevitable; but they should be anticipated by recognition of the earliest subjective symptoms. To secure the highest degree of myocardial rehabilitation possible, the treatment should be sufficiently prolonged. The patient should be under constant observation and present himself for examination at frequent intervals.

COMMENT

The first signs of failure of the circulation due to myocardial insufficiency are always subjective and are referred to the respiratory system; therefore respiratory distress in response to effort is among the earliest signs of myocardial insufficiency. Primary myocardial insufficiency asthma is easy to recognize in its earliest stages if one will bear this in mind.

Why a certain group of heart failure cases should present typical asthmatic symptoms can not in the present state of our knowledge be satisfactorily explained, except possibly on the hypothesis that these individuals have an asthmatic predisposition. It is known that lung engorgement predisposes to bronchitis. The latter condition can only be looked upon as a contributing factor in the production of the asthmatic symptoms because when the circulation is restored by the administration of digitalis the asthmatic signs clear up. A subsequent attack of bronchitis while the circulation is efficient does not produce asthma.

It is the tendency today to associate asthma with some form of protein sensitization as the etiological factor. Failure to elicit sensitization ends the patient's hope of relief. These insensitive cases are chiefly those past middle life. In a comparatively large number of these cases, although the physical signs of cardiac impairment are not marked or are even absent, the recognition of primary myocardial insufficiency as a factor in the etiology of asthma will help to clear up at least some of these previously incurable cases. Failure to recognize this symptom complex heretofore has been due principally to a tendency on the part of many practitioners to cling to the orthodox idea that circulatory failure sufficient to cause asthma must be associated with the profound organic lesions as met with in cardiac asthma. This symptom complex is being studied by means of instrumental methods with the view of determining their value in checking up the effects of treatment.

CONCLUSIONS

1. Primary myocardial insufficiency asthma complex is an important etiological factor in certain types of asthma in individuals past middle life.

2. An increased pulse rate, regular and persistent, in conjunction with a history of subjective symptoms indicating the earliest stages of myocardial failure together with the age of onset over forty and more usually past middle age, is diagnostic of primary myocardial insufficiency asthma, when other causes of asthma could be excluded.

3. The administration of digitalis in adequate doses serves not only as a diagnostic measure, but is strikingly efficacious in relieving the symptoms.

4. The injection of epinephrin hydrochloride does not relieve the asthma, and is contraindicated.

5. The clinical detection of primary myocardial insufficiency asthma requires no special skill. It is within the reach of the general practitioner if he will give it some consideration and thought.

[1]Case histories and a complete list of references will appear in the author's reprints.

Radiotherapy Technic

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The subject of radiotherapy is getting to be of great importance and attracting the attention of the medical world as never before, and in the healing art has become a daily necessity. Ten to twenty years ago the literature on the subject of radiotherapy was very meagre and that confusing. It was directed almost entirely to malignancy while today there are many journals devoting much time to chronicling its march of progress.

The technic of radiotherapy is the art of coordinating the four great factors in the production of x rays in a manner to procure the quality and quantity of ray desired in a given case. This art has been perfected and brought nearer to a real science today than ever before. New instruments of diagnostic precision, known as the iontoquantimeter and ionizing chamber, while quite complex in their use, have been of great value in stabilizing all means of measusing the dose of x ray. In fact, the great improvement in measurements of dose and technic generally make the use of the great two hundred and three hundred KV machine possible. By the use of the ionizing chamber there can be mapped out and calibrated data for ordinary use in producing an exact dose through specified filters of one mm. and one and a half mm. copper and also from five to ten mm. of aluminium for exact distances almost through the whole body. Erythema doses in quantity can be delivered for several inches into bodily tissues with great precision. While the use of these ionizing chambers are an imperative necessity for exact doses of the larger machines, they have otherwise helped to conform and stabilize the more common measurements of spark gap and current, which have been in general use for some time and are yet the practical means of measurements for the great majority of our therapeutic work at the present time.

The four supreme factors of importance are: Spark gap—KV; distance; milliamperage (current); time. It is possible that if three of these factors are known the fourth can be readily determined. The problem of doses is illustrated thus:

$$\frac{\text{Ma} \times \text{KV}^2 \text{ or spark gap} \times \text{time}}{\text{Distance}^2}$$

This will give you the dose employed in ma. minutes as:

$$\frac{5 \text{ ma} \times 8^2 \times 6 \text{ min.}}{8^2} \text{ equals 30 mp. min.}$$

If you wish to give—say a 45 m. dose it could be worked out as follows:

$$\frac{6 \times 9^2 \times 6}{8^2} \text{ equals 45 mp. min.}$$

This gives us a full erythema dose.

Remember: A decrease in current increases time 10/3; increased distance increases time 9/4; decrease gap increases time 3/2.

Filters may range from one mm. aluminium to one mm. cu. In current of one hundred KV or less aluminium filters are ordinarily used and in deep work and heavy voltage five to ten mm. may be employed. In general superficial use, while not exceeding five to six ma. of current, three to four mm. aluminium are sufficient and in light superficial work frequently no filter is required, but where the current is light but voltage high and a long time treatment is to be given, a filter is needed. Erythema dose—skin tolerance—is forty-five mp. min.

	equals
Intensive dose—filter	1¼ H 4 Hamp 10 X
Semiintensive dose or Inhibition dose. 2 to 4 alu. filter	½ H to 1 H 3½ Hamp 4 X to 8 X
Fractional or Stimulating dose. Light filter	⅛ H to ½ H 1 X to 4 X 1/10 Hamp to 2 Hamp

Nearly all skin conditions respond better to short wave lengths and as a rule spark gaps five to six inches should be used and when filter is employed use eight to nine inch spark gap. Frequently dose one eighth H to one half H may be given once or twice weekly. Semiintensive dose, one half H to one H may be given biweekly. If filter is to be used the quantity may be increased from one H to two H. Intensive dosage, one H to two H without filters, and when filters are used the dose may be increased to two and three H monthly—not oftener with safety.

Effects of radiation, for convenience, are ordinarily divided into three groups, namely, stimulation inhibition and destructive.

STIMULATION

Many human ills are due to a lack of coordination f cell and nerve magnetic impulses, as well as to hany hypofunctional or hyperfunctional conditions. he blood supply may be at fault either primarily r secondarily. There may be primary, secondary or ptic anemia. Most of these conditions can be enefited through this stimulating effect of radiation. o not understand me to make a claim as a cureall or the x ray. With the variation in dose already inted at, many diseases can be reached by this meth-1. While many diseased conditions can be cured y the x ray there are many of them that can be ired more quickly and economically by other means ian the x ray.

The x ray is going to cause a closer study of the iology and pathology of all disease processes. A eat advantage of radiotherapy is that you can ply it where you need it. It does its work in the finitesimal tissue cells, it can stimulate cell proeration, division, and increase its vigor, vitality and ne, producing an equilibrium in the unbalanced lls. The law of Arndt and Schultz declares that e power that stimulates to destruction can stimue to health. It has been demonstrated for years at the x ray can and does overstimulate to destrucn the cancerous cells in malignant conditions. I ote for ten or more years on x ray stimulation cells to health and vigor.

Schmidt has been able to demonstrate the stimuing effect of radiation on living cells in a most isfactory manner. He was able to demonstrate at normal cells under the effect of stimulating ses took on vital stains rapidly and in an increas- quantity, while in those submitted to a heavier se the amount of stain was inhibited and was more seminated in the cell and the cells that had reved destructive doses of x ray did not take on any in whatever.

Stephan of Germany has successfully stimulated liver and pancreas in diabetes, the kidney in acute enchymatous nephritis, and the stomach in achylia trica.

Much work is being done and the literature is ndant in regarding the use of x ray stimulation hypofunctioning organs, as the ovaries for dysnorrhea, the periosteum for ununited fractures, nulating doses to the liver, pancreas and adrenals. ch is being accomplished in x ray applications to hypophysis as an aid to the production of endoe hormones. The endocrines are attracting much ntion in this line of work at the present time. ne authors assert that through the hormones and nges produced in the endocrine glands many dis- can be reached and relieved more quickly than direct treatment of the offending organ.

ritz Hilpert, of the Erlangen Clinic, states that x ray can cure tuberculosis anywhere in the body. nkel advocates a dose of sixty per cent. HED in tonitis and in tabes mesenterica. He asserts two things are required: stimulation of the acies of the local cells and elevation of the general gocytic powers of the body, both of which can ccomplished by means of the x ray. Many be- that this mode of treatment should be classed vaccines, milk, and split protein products.

My work and assertions in the treatment of tuberculosis by the stimulating and invigorating effects of x ray upon normal and pathological tissue cells are being sustained. My formula of treatment is as follows:

For thin patients:

$$\frac{2 \times 8^2 \times 10}{12^2} \text{ equals } 1/4 \text{ H}$$

to

For heavier patients:

$$\frac{3 \times 8^2 \times 10}{12^2} \text{ equals } 1/3 \text{ H}$$

One of these doses is given three times weekly, treatment alternating from the back to the front of the chest and are given through two mm. of aluminium followed on alternate days with a one pole static stress application.

Eczema requires fractional doses ordinarily and the doses can be repeated once or twice weekly until an effect is noted.

INHIBITION

In this class of cases we will place those requiring amounts of x ray ranging from one half H to the full H or near the full erythema dose. It is to take the place between definite stimulations and complete destructive effects. Many eczemas, lupus, superficial exudates and carbuncles will come in this class. Instead of trying to mention all conditions applicable under this heading, I will mention only a few. Alopecia, ringworm and favus will usually come under this heading with the dose ranging around one H or

$$\frac{3 \times 9^2 \times 9}{8^2} \text{ equals } 35 \text{ mp.}$$

and this dose can be repeated in two to three weeks if needed and the formula can be changed to suit individual machines. Goitre may be classed under this same heading and treated with the same dose biweekly. Occasional cases of goitre do well with fractional doses. In treating goitre in this way you will have some failures and then again some brilliant results.

INTENSIVE DOSAGE

This is usually to be given with filters ranging from four to ten aluminium to one mm. cu. Kroenig places the erythema dose or skin tolerance measured by the ionizing chamber at 170 E and all the massive depth doses are calculated from this surface dose.

Kroenig's comparison of his dose with H is as follows:

Kroenig's 75 E equals, with aluminium filter 3 to 10 mm., 1.5 H.

Kroenig's 150 E equals, with one mm. copper filter, 2.5 H.

As it is more practical I will still use the H as our unit for calculating the massive doses. The author reported a case of uterine fibroid of immense size treated with benefit by means of the x ray, in 1902 before the American Electrotherapeutic Association, and from this little beginning has developed one of the most popular methods of treating these conditions. These tumors usually require a rather heavy dose. Kroenig's ovary and fibroid dose is put down as 33 E and the formula is

$$\frac{33 \text{ E}}{170} \text{ equals } \frac{1}{6}$$

and with this dose he rarely fails to produce successful results as regards tumor and symptoms.

Carcinoma and other malignant conditions have received more attention at the hands of the radiotherapist than any other pathological conditions and the whole world is watching and hoping that a definite and positive cure for this dread malady will be developed by means of this agent.

Kroenig has worked out a dose known as a carcinoma dose and when applied correctly causes the disappearance of the disease very rapidly as far as sight and touch are concerned, and with much tainty this dose is stated at 150 E and the equatio

$$\frac{170\ F}{150} \text{ equals } \frac{5}{6}$$

There is no doubt this is the correct amo of energy to use in these cases and if cannot give this dose at one sitting it should delivered with largest KV possible and in as sh a time as safety will permit with the largest machi at your disposal.

The X Ray as an Aid in the Differential Diagnosis of Abdomina and Chest Conditions*

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In presenting this subject, diseased processes within the chest and abdomen have been selected, in which the predominating symptoms may be referable to one region, but the pathological lesion located in another.

In no other field is the diagnostician's judgment taxed to a greater extent. It is of prime importance that his conclusions be correct, for in the one case immediate surgical intervention may be necessary and in the other, contraindicated. An incorrect decision in either case would result disastrously to the patient. The clinician, therefore, should avail himself of every possible aid to perfect a diagnosis.

The chief lesions in which the clarifying influence of the röntgenologist is of supreme importance are in the differentiation of:

1. Pneumonia from acute appendicitis, especially in children. 2. Empyema from subphrenic abscess. 3. Pleurisy from cholecystitis. 4. Traumatic pneumo or hemopneumothorax from intraabdominal perforation and hemorrhage of traumatic origin. 5. Cardiac and aortic lesions from suspected lesions of the stomach and duodenum. 6. Lower esophageal conditions from gastric lesions. 7. Tumors of liver and spleen from masses in lower lobes of the lungs.

No more striking illustration of the difficulties encountered and the importance of the conclusions can be given than the differentiation between early pneumonia and acute appendicitis, when pain in the lower right quadrant is the most conspicuous symptom. All the symptoms ushering in a pneumonia may be present but are overshadowed by the pain and tenderness in the right iliac fossa. The diagnosis is of increasing difficulty because in the early stages of some of these cases no physical signs of pneumonia may be elicited.

If pneumonia be the causative factor of the pain, and consolidation exists, it is clearly demonstrable on x ray films and often at the fluoroscope. If the pathology has not progressed to consolidation a hazy appearance resembling a cloud of cigarette smoke is seen, indicating an inflammatory process. The contrast between the hazy base and that of the c one is quite decided. If there is no existing p monia, the normal radiability of the lungs is disturbed.

This is considered of such importance on on the pediatric services at the Mt. Sinai Hospital there is a standing order that all children, in w an acute appendicitis is suspected, shall have x ray study of their chests to eliminate the sibility of pneumonia before any surgical inter tion is considered. In hospital procedure, this amination is easily carried out and now, with perfection of the portable x ray apparatus, is al as easily accomplished in the home of the patient

Empyema, one of the most frequent complicat of pneumonia, is the condition most frequently fused with subphrenic abscess, because of the s larity of symptoms and physical signs. The his is quite different. The diagnosis can be readily m at the fluoroscope in conjunction with films. subphrenic abscess the diaphragm is greatly elev and its respiratory excursions are restricted. costophrenic angle is clear and the radiability of lung is normal. There is an increased density the liver area. In empyema, the röntgen pictu a totally different one. The diaphragm is not s the costophrenic angle is obliterated and a fluid is seen. The normal lung radiability is replace a dense shadow in its lower portion. One can r ily see while clinically these conditions can be fusing, röntgenologically there is usually little culty in differentiating them.

The pain due to pleurisy often simulates that to cholecystitis to such an extent that at times confusing. Where pleurisy is the causative fa fluoroscopic examination reveals limitation of excursions of the diaphragm and the pictures close some evidence of pleural adhesions or th ening, if the process be chronic. Where the pa of gallbladder origin, the x ray of this organ be of great value. With the improved technic a better understanding of the obstacles to be c come, the x ray diagnosis of diseases of the bladder has reached a fairly high degree of accu

*Read before the Southeast Branch of the Philadelphia County Medical Society, November 1922.

Calculi are found with more frequency than in the past and in many cases in which we are unable to demonstrate the presence of calculi, the shadow of the gallbladder is shown. It is the consensus of opinion among radiologists that normally the gallbladder casts no shadow and when it is seen on the films it is considered pathological. If the routine pictorial study reveals nothing abnormal in the gallbladder, a bismuth study of the stomach and duodenum may give us some information. Reflex signs such as gastrospasm, six hour retention and hyperperistalsis suggest cholecystitis. Distortion of the duodenal cap without other signs of duodenal ulcer justifies the diagnosis of pericholecystitis with adhesions. No negative gallbladder diagnosis should be made without a combination of these methods.

In discussing trauma, a recent case will serve to illustrate the importance of determining, if possible, whether it be a chest or abdominal injury. A young boy, run over by an automobile, was brought to the hospital in extreme shock, respirations slightly labored and with pain, tenderness and rigidity in the upper abdomen. Injury to the abdominal viscus, probably liver with internal hemorrhage was suspected and operation suggested by the surgeon, but the attending physician could not eliminate the possibility of chest injury and suggested an x ray examination. This was done and it revealed a pneumothorax with partial collapse of the right lung. This of course did not eliminate abdominal injury, but was considered sufficient to give the clinical picture presented by the patient. Surgical intervention was therefore postponed. That these conclusions were correct was shown by the youngster's speedy and uneventful recovery. The röntgen picture of severe chest injury usually shows fractured ribs, the presence of air, sometimes fluid (blood) and air, depression of the diaphragm, collapse of the lung and displacement of the heart toward the unaffected side. In the early stages, injury to abdominal viscera with hemorrhage cannot be shown by x ray examination, although after a few hours a haziness, resulting from the presence of blood, may be noted in both flanks and if the stomach or colon has been injured, a shadow of decreased density resulting from the presence of gas may be visualized in the subphrenic spaces.

Violent trauma to chest or abdomen, may result in a diaphragmatic hernia, a condition rarely seen and less often recognized. According to DaCosta in 50 cases collected by Leichtenstern, only five cases were diagnosed before death. The clinical picture is one of severe shock, dyspnea, cyanosis and pain in the chest and is confused with the typical chest injury described above. Its differentiation is important because the treatment of the two conditions is radically different. No other method except laparotomy is as certain in its diagnosis as an x ray examination, especially if the stomach is the organ involved. The bismuth study will show the stomach to be partially or completely in the pleural cavity.

Now we come to a consideration of a group of chest diseases producing epigastric distress, a rather common complaint and one sometimes difficult to solve. Patients with this symptom as a predominating one are usually referred to the röntgenologist for a gastrointestinal examination. The gastrointestinal tract including the gallbladder is found to be negative, but in the study of the chest at the fluoroscope, a markedly enlarged heart or an aortitis or even a small aneurysm may be found. The clinician is usually aware of its presence but the epigastric distress is so marked that he desires to eliminate a gastric lesion. Röntgenologically, in cardiac disease, the heart shadow is seen to be enlarged in one or all its diameters. In aortitis, the aortic shadow is widened and calcareous plaques may be found imbedded in its walls. In aneurysm, a pulsating mass is seen arising from some portion of the aorta.

Lesions of the lower portion of the esophagus are frequently causes of epigastric discomfort. The most frequent lesions are cardiospasm and organic stricture and these must be differentiated from gastric lesions. The x ray appearance of cardiospasm is as follows: There is more or less complete obstruction to the passage of solid foods. Semisolids and liquids are delayed. The lower border of the stricture is smooth, regular and conical in shape, with a symmetrical termination. The esophagus above the involved area is dilated.

In organic strictures, instead of having smooth, regular margins we find that one of the walls is markedly roughened and irregular and there is an encroachment on the lumen of the esophagus. There may be some dilatation above the stricture, but it is not usually as marked as in cardiospasm. Benign cicatricial strictures give the same röntgenological picture as malignant lesions and must be differentiated by history and other data.

The epigastric distress due to lesions of the stomach, duodenum, gallbladder or appendix is not within the scope of this paper and will not be discussed.

The last differentiation to be considered is between tumors of the liver, kidneys and spleen or elsewhere in the vicinity of the diaphragm, and masses in the lower lobes of the lungs. Very frequently the mass can be shown on the x ray film and fluoroscopic study can determine whether it is abdominal or thoracic, but it is very often difficult to say with which viscus it is connected. In these cases, as well as any condition around the diaphragm where the ordinary methods of diagnosis have failed, a pneumoperitoneum study may be of great value. It will readily show whether the lesion is supra or infra diaphragmatic and show changes in contour and size of the solid viscera, i. e., kidneys, spleen, liver and also the gallbladder. In this method air oxygen or carbon dioxide or a combination of the two is injected into the peritoneal cavity. The puncture is done in the same manner and under the same aseptic precautions as the ordinary abdominal paracentesis. Care must be taken that gas is not introduced too rapidly or too forcibly. In women it is sometimes advisable to use the transuterine route, if there are no contraindications. Pneumoperitoneum has a distinct value but it is not recommended as a routine procedure. We must remember also that certain conditions, such as cardiovascular diseases, diffuse infection and extremes in ages, contraindicate its use.

This in brief covers the important confusing abdominal and thoracic lesions, as seen by the röntgenologist. I have shown you the methods employed, their value and limitations, in this particular field.

1923 Spruce Street.

Symptomatology and Diagnosis of Polycystic Kidney*

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Cystic disease of the kidney, including the two types, solitary or single cyst and multiple cysts, is a condition of comparative rarity and of sufficient clinical importance to warrant a report of all cases. Its relative infrequency, its etiology, and its symptomatology are three facts which form the major portion of the idea which most of us have readily at hand in reference to the condition. Studies as to its unilateral or bilateral nature seem to have crystallized thoroughly into the conclusion that it is always bilateral. Congenital and adult types are also conceded, which present different types of symptoms. Its familial occurrence has been strengthened by numerous observers, most recently by a careful study on the part of Crawford. The familial incidence, it was determined, had extended throughout four generations. The report is most interesting. Over fifteen cases were noted in the four generations, and in one case, seven children all had polycystic kidneys. One is living at the age of seventy-six years, three of the children died in uremia, the remaining four married and the condition was noted in their offspring.

Zeit, of Chicago, reported the occurrence of heredity in three generations, as follows: A forty year old mother and a one year old baby, both with bilateral polycystic kidney disease; the patient's father died from polycystic disease; all her children (four) are now suffering from kidney disease, presumably polycystic.

Barnett a few years ago, from an extensive correspondence with the surgeons, anatomists, pathologists, and the clinics and institutions where surgery is practised and taught in North America, collected 251 cases. This demonstrates the infrequency of occurrence. The diagnosis is seldom made previous to operations or autopsy. In two of our cases an exact clinical and pathological diagnosis was established by pyelography.

Occlusion of the urinary tubules seems to be the pathogenesis of the cyst formation. It is hardly necessary to mention the various theories which have at times held sway or have been advanced. The acceptance of the defective development of the urogenital organs as the causative factor, seems to be the consensus of opinion. It may be stated briefly that the kidney as a whole is formed of two embryonic structures, the cortex and greater part of the medulla arising from the nephrogenic tissue of the Wolffian body, while the ureter, pelvis, and a portion of the medulla, containing the collecting tubules, are a separate formation from the Wolffian duct. Normally these two parts unite, and the connection becomes established between the former (renal) portion, containing the glomeruli, convoluted tubules and Henle's loops, and the latter (pelvic) portion, containing the collecting tubules. Thus the urinary channels become continuous from glomeruli to calyces and pelvis. The malformation theory is based on the assumption that there is a failure, more or less general, on the part of these two portions to unite, by some atresia, lack of fusion or misalignment, and an obstruction results affecting the tubules of the medullary portion and causing cystic dilatation of the tubular system above the collecting tubules.

The extent of the entire process depends on the relative number of the tubules which do not join. If this is extensive, and the majority of them do not connect, there is no kidney tissue left to eliminate urine—the cystic formation is rapid and death soon supervenes. Similarly if a minor part of kidney tissue only is affected, there is frequently sufficient to carry on the work of elimination, and the patient may live for many years.

Stress is laid by all writers on the prevailing symptoms of kidney insufficiency as associated with this condition. This would hardly seem to be entirely true. Excepting the congenital type the period of active symptomatology may be delayed until well past middle life, the fourth decade, as has been generally observed, is usually a significant time.

Dull pain in the back and loins, persistent headache, frequency of urination, and occasionally hematuria are symptoms which may be noted. Other symptoms are tumor, ptosis, polyuria, toxemia, uremia, backache and abdominal pain. The weight is a menace to the patient. Frequently the urine shows only evidence of chronic interstitial nephritis and unless the cysts communicate with the pelvis of the kidney and are infected, there may be no special indication of this condition. Intermittent hematuria was the main symptom in two of my cases. It was of eleven years' duration in one, painless in type, although at times spasms of ureteral colic were observed, probably due to ureteral clots. This would, therefore, include the possibility of a polycystic kidney in the differential diagnosis of the cause of the hematuria and forms a further reason for the utilization of pyelography and the establishment of the final diagnosis. The practical importance of recognizing this condition is readily apparent, as errors in diagnosis have resulted in the removal of a polycystic kidney.

Careful urological investigation is clearly essential, and in cases presenting a discrepancy of function, delayed phthalein appearance, time, etc., cystic kidney must always be suspected. This is especially true if a kidney tumor is palpable. Chemical examination of the blood may reveal a decrease in the output of the nonprotein content but this is not invariably the case.

*Read before the Genitourinary Section at the New York Academy of Medicine, May 15, 1923

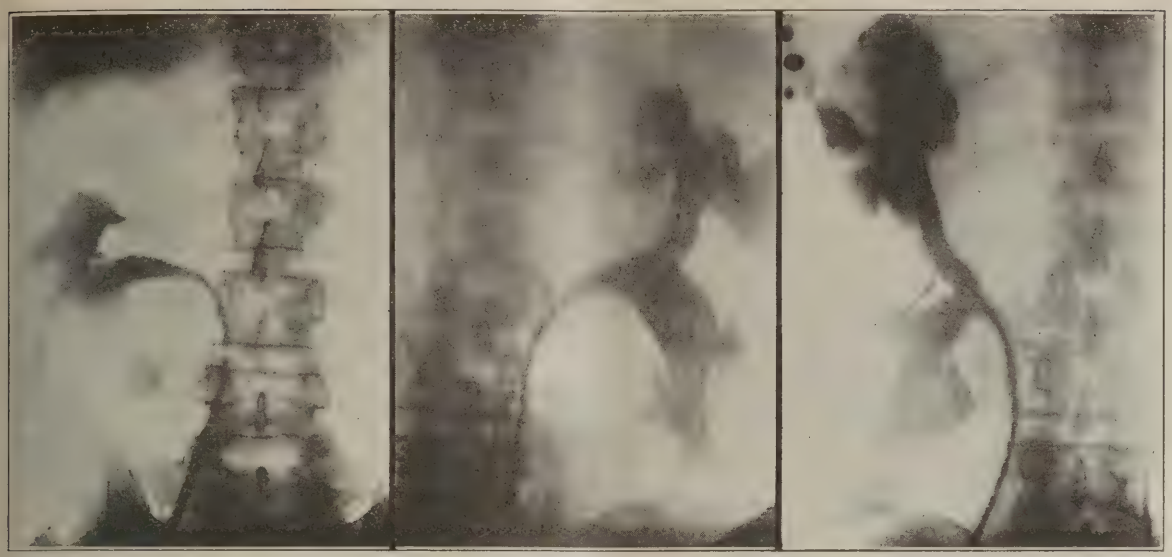

Fig. 1. Fig. 2. Fig. 3.

Fig. 1.—Case I. Note the dislocation of the ureter as it is pushed inward and upward to wind around the tumor; the indefinite character of e calyces and the lack of configuration in the lower portion of the pelvis.

Fig. 2.—Case II. Pyelogram of a kidney showing characteristic configuration.

Fig. 3.—Pyelogram of a tremendous kidney, filling almost the entire abdominal cavity. Only symptom, hematuria for eight years. As can noted the upper margin of the kidney goes to the level of the tenth rib, and descends well below the crest of the ilium.

Pyelography gives a characteristic picture which quite conclusive—usually the kidney contains sev- al times the normal amount of fluid and injection painless. The characteristic symptoms on disten- on of the pelvis are not obtained. There is a finite irregularity of outline which must not, how- er, be confused with tumor. The irregularity is ore or less circular in outline, the size depending the cysts with the socalled cupping appearance d broadening of the pelvis and differing from the ling defects, with indefinite outlines, and bizarre rms, noticed in hyperne- roma.

In polycystic kidney we fre- ently find an obliteration or ortening of the calyces or egular retraction of the lyces due to encroachment the pelvis of cortical cysts. largement of the pelvis and ten change in the axis, gives irregular, oblong or oval ntour resembling pyonephro- , but without pyuria, and a culiar rounded or cylindrical tline, and often a change in e relative position of the pel- s. In hypernephroma we y have complete obliterа- n of the pelvis or narrow eaks and irregular outlines d usually more complete re- ction of the calyces. If a st ruptures into the pelvis of e kidney the opaque medium ich fills it gives a rounded tline which contracts with cysts which encroach on e pelvis.

The recognition of the part yed by faulty development in other portions of the urological tract and their relative frequency leads me to report three cases of polycystic kidney—two of which occurred in my own practice within a few days of each other, and the other about the same time in the Urological Service at New York Hospital.

Case I.—Male, fifty years old, married, no children, mother died of kidney disease. Perinephritic abscess on left side while living in Los Angeles in 1915. It was opened and drained and examination revealed a polycystic kidney. Some sixty cysts were punctured and drained. Two years later a floating or ptosed kidney was found on the opposite side. The chief subjective symptom was backache and pain in the lower quadrant on the right side. The operation had apparently relieved the discomfort on the left side. The urine showed evidence of chronic interstitial nephritis. Both kidneys were palpably enlarged. As a history of polycystic kidney on the left side was obtained, a pyelogram of the right side only was made. The separated urine specimens were obtained and found to be about equal in quantity and contents and comparable to the specimen obtained from the bladder. The phthalein output was four per cent. on the right and five per cent. on the left side in twenty minutes.

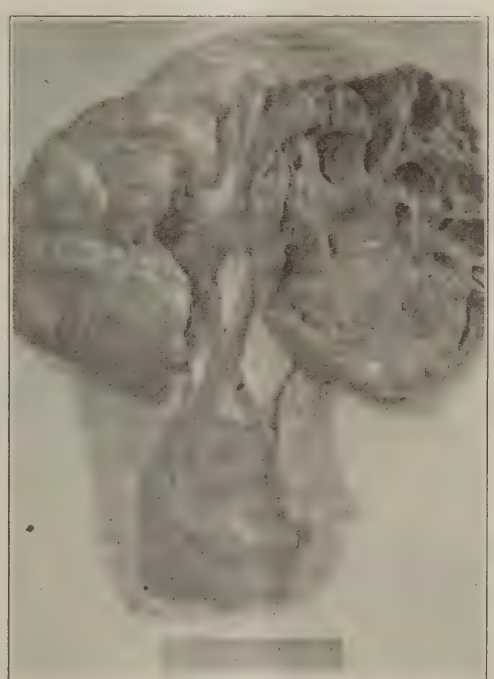

Fig. 4.—Pyelogram of patient, aged twenty-three. Only symptom was rightsided tumor and an occasional pain in the right side, discovered in the course of a routine urological examination. Typical pyelogram can be noted.

Forty c. c. of twenty per cent. sodium iodide solution was injected into the right pelvis without the least dis-

comfort. This was drained off afterwards with apparently little reaction.

Case II.—Male, forty-three years old, married, no children, no hereditary history relevant to his condition. Intermittent hematuria for varying periods and at varying intervals for twelve years.

Fig. 5.—Photograph of a waxed model, made by an artist, of kidneys removed from the patient dying at the age of forty-seven. Relative size can be determined by attached scale. Each kidney was the size of a large watermelon.

During this time three examinations by the Life Extension Institute and two by urologists of prominence were all negative. Present hematuria began seven days before examination with frequency and urgency day and night. Residual urine fifty c. c. Cystoscopy revealed moderate lateral prostatic intrusion and slight trabeculation. The orifices appeared normal and from the left blood was ejected. Catheters were passed easily to the kidney pelves and the urine collected for ten minutes. The specimen from the left side was mostly blood and from the right, urine of low gravity and urea content with a trace of albumin, and no casts or blood. The phthalein appearance time was twenty-five minutes on the left and twenty-six minutes on the right side. Plates and smears were negative for bacteria. The left kidney pelvis was injected with thirty-six c. c. of twenty per cent. sodium iodide solution without discomfort, and pyelograms were made. The opaque medium was drained off and as the patient had no reaction a similar procedure was carried out on the other side one week later.

Case III.—Female, forty-three years old, single. No special prior illnesses relevant to the condition reported. Mother died of kidney disease, the nature of which was not reported.

Present illness began over six years ago when the patient became cognizant of a mass in each flank, which, by pressure, caused physical interference with the functions of the gastrointestinal tract. These symptoms progressively increased in severity until, while in France in 1919, she had persistent vomiting for three days and a laparotomy was decided upon and done, and bilateral polycystic kidneys were found. The operation was exploratory and only for diagnosis. On January 14, 1922, she was admitted to New York Hospital, complaining of abdominal pain—the first acute pain—and intermittent hematuria. The uranalysis showed a low specific gravity, traces of albumin, a few hyaline casts, and a few white and red blood cells. She left the hospital, improved, after a few days, and was readmitted on December 14, 1922. The urinary findings were about the same but showed evidence of uremia. The phthalein output was six per cent in the first and twenty-five per cent. in the second hour. The blood urea increased in ten months from 61.16 to 84.64 and the creatinine content from 4.4 to 13.32 milligrams in 100 c. c. of blood.

Owing to retention and the increasing uremic symptoms an operation seemed imperative and was done on the left side under gas and local anesthesia, December 18, 1922. Numerous cysts were aspirated and 2,200 c. c. of fluid removed. In some of the pockets the fluid was thin, clear or brownish and in others blood tinged. As the needle was withdrawn

Fig. 6.—Pyelogram of patient in Fig. 5, made after kidneys had been removed. The cystic character of the kidney tumor is quite obvious and the configuration closely resembles the accompanying illustrations.

the wounds continued to ooze so the cysts were punctured—the socalled Rovsing operation. The patient died five days later from uremia. No pyelography was done as the diagnosis was made by operation. I present herewith a picture of the autopsy specimen and postmortem pyelograms.

TREATMENT

This is essentially palliative and must be along conservative lines. One must guard against the enthusiasm of the surgeon in operating for unilateral bleeding, where a cystic kidney is present, and probably bilateral. Frequently until the cyst formation is extensive, the kidney may be considerably enlarged and yet show no definite external indication of obvious cystic kidney. In cases where the symptoms are sudden in appearance and apparently are progressing rapidly, all out of proportion to the development of the condition, the Rovsing operation—namely that of puncturing the cysts, may be performed. The presence of the increasing cystic tissue sometimes may squeeze the remaining healthy kidney tissue and gradually interfere with its function. It is in this type of case that the Rovsing operation is most likely to be beneficial.

One of my patients has been relatively free from symptoms following this operation performed eight years ago.

CONCLUSIONS

1. With the aid of pyelography, particularly in the past two years, a relatively new field has been opened up in the association of clinical symptomatology with pathological anomalies of the genitourinary tract. The condition is universally commanding attention and whereas two years ago isolated cases of double ureter, bifid pelvis, and similar conditions were reported singly and considered unusual, these are now being reported in groups and noted frequently. It is not unlikely that polycystic disease of the kidney may fall largely within the same class. There is no reason to suspect the occurrence of fewer cases of misalignment and faulty development which contribute to polycystic disease of the kidney, than of faulty development, which gives rise to bifid pelvis and double ureters. Attention is directed, therefore, to this fact and the value of pyelograms in the diagnosis.

2. The influence of heredity has been established beyond question of doubt and this factor should always be considered, once the diagnosis has been arrived at. From a prophylactic viewpoint in families where the condition has already been recognized in one, it should be of value in the care of the others.

3. Simple operative methods—puncture of cysts—are often of palliative value. Nephrectomy is indicated only when the function is nil.

4. The obscurity which still surrounds the condition warrants a careful study and report of all cases occurring in individual practices and hospital services, as it is only by a comparison of cases that the real incidence can be proven and progress made in the therapeutic and operative procedures, which may be beneficial.

Pulmonary Abscess Following Aspiration of a Tooth Cured by Artificial Pneumothorax

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A careful search of the literature fails to reveal a case report of an instance similar to that presented in this paper.

CASE REPORT

CASE.—The patient, F. A., a man thirty-nine years of age, entered the hospital on June 20, 1922, complaining of cough and expectoration of ten days' duration, night sweats for two weeks and blood streaked sputum once on the morning of admission. Two weeks prior to admission extraction of a tooth was attempted by a dentist using nitrous oxide oxygen anesthesia, given by a nurse. The dentist asserted that the pharynx was packed in the usual manner and that extraction was uneventful, although the patient's wife stated that he was under the anesthesia for more than one hour. Directly after the extraction, pain was noted in the right mandible, which continued for one week. Another dentist was consulted who treated the right mandible for four days. On entrance the patient's temperature was 100.4°, pulse 84, and respiration 22.

The patient was a middleaged man, good color, bilateral facial flush; did not present the picture of being extremely ill. Nutrition was good and there was no evidence of recent loss in weight. The skin was moist—no unusual pigmentation, no rash or previous operative scars. The conjunctiva was somewhat infected, sclera clear; no exophthalmos, nystagmus, extrinsic ocular movements and convergence good, pupils equal, reacted to light and accommodation, consensual reflex present. Media clear, vessels normal, disc clearly defined, cupping normal, no hemorrhages, no deafness, discharge or tophi. Slight septal deviation to right—some slight discharge. Sinuses not tender, transillumination good. There was anesthesia over distribution of right mandibular nerve. Lips and mucous membranes of good color. Several devitalized teeth were present with caries and pyorrhea. A discharging sinus was present in right mandible. The tongue was coated, tonsils were of moderate size, pharynx injected. There was some cervical adenitis on the right side. The thyroid was not enlarged. The chest was that of a well developed male, symmetrical, no evidence of restricted motion, expansion good. Vocal and tactile fremitus normal. No impairment to percussion, Krönig's wide and equal. Breath sounds vesicular and, except inferior to right scapula, nothing abnormal was heard. Inferior to right scapula, there were heard, after expiratory cough, a series of crepitant râles at the end of inspiration. The apex was in the fifth interspace, twelve cm. to left. Left border of heart thirteen cm. to left in fifth interspace. To the right, two cm. in the third interspace. Sounds clear, regular, no accen-

tuations or murmurs. The pulse was 88, regular, average size and tension. The vessel walls were not thickened. Blood pressure, 130 systolic, over 80 diastolic; weight 144 pounds, height 5 feet, 7¼ inches. The white blood cell count was 14,100.

On the second day of admission, there was a definite area of impairment from the right midscapular region almost to base. The breath sounds were diminished over this area. Numerous sonorous râles with an occasional crepitant râle were heard over this area. There were occasional distant sibilant râles over the left chest.

Stereoscopic examination of the chest on June 22nd showed slight hypertrophy of the heart to the left. In the region of the fourth interspace and eighth spine on the right side, there was considerable increase in interpulmonary opacity suggesting an ill defined consolidation. A small spot of calcification at the peripheral end of this area rather ill defined suggested a tooth or tooth fragment.

There was a gradual fall in temperature and pulse rate for nine days. The patient's cough was much less distressing. Physical signs in the chest were unchanged.

On the ninth day the temperature suddenly rose to 103.2°. There was moderate cough with sudden increase of expectoration. A total of 200 c. c. thick, foul smelling, gray green sputum was raised in two hours. White blood cell count 16,000. Expectoration then became profuse, the odor foul. Postural drainage was started. No elastic tissue found in repeated examinations. The sputum was of the characteristic three layer type. A daily temperature of the septic type began on the ninth day after admission.

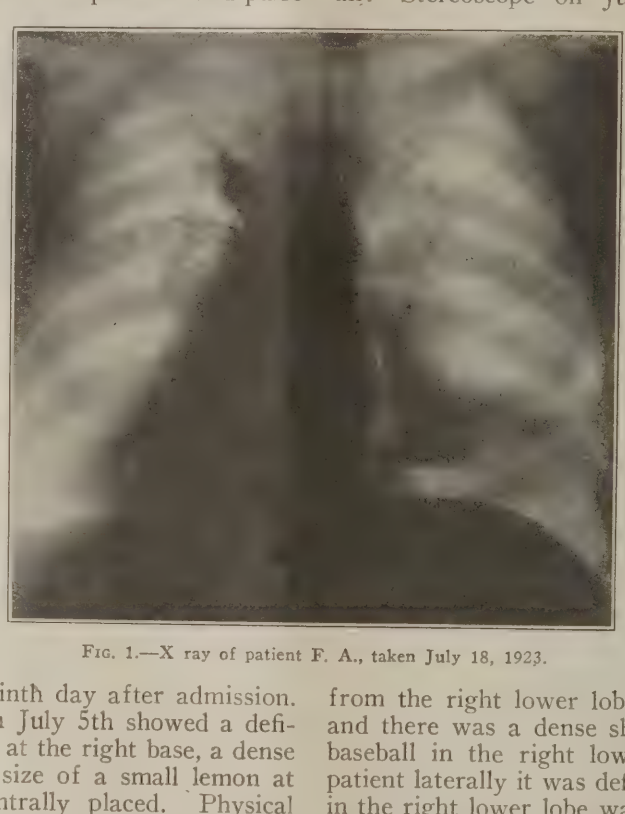

Fig. 1.—X ray of patient F. A., taken July 18, 1923.

Stereoscopic plates taken July 5th showed a definite increase in the process at the right base, a dense shadow being present the size of a small lemon at the right base, rather centrally placed. Physical examination showed restricted motion of the right base, moderate impairment in right axilla, none anteriorly. There was impairment in right interscapular region increasing to practically flatness at base opposite ninth and tenth dorsal spines.

Artificial pneumothorax (air) was induced the twenty-second day of admission, using 300 c. c. of air. Stereoscopic examination of the chest showed upper portion of the right lung partially collapsed due to pressure of therapeutic pneumothorax and in the lower lobe there was a definite increase in density with rather ill defined edges which seemed rather central. The artificial pneumothorax did not extend beyond this point, being prevented by adhesions, apparently. At the upper edge of this density was a small irregular shadow.

Pneumothorax with 650 c. c. of air was induced the twenty-fourth day after admission. The temperature began to drop after the first injection and continued to drop. The sputum was somewhat increased, the cough lessened.

Pneumothorax was again employed on July 18th the twenty-eighth day of admission, using 340 c. c. of air. The stereoscope showed therapeutic pneumothorax more marked, the upper part of the lung being more collapsed. The abscess cavity was smaller and a calcified shadow of higher density than the rib suggested the possibility of a tooth root. Adhesions were still present in the lower portion of the lung, preventing greater collapse. There was a moderate collection of air above the diaphragm. The temperature became normal for two days, then rose again to 102° daily with some remissions. The left border of the heart was 15.5 cm. to the left. Pneumothorax was again induced the thirtieth day of admission of 400 c. c. of air. Stereoscope on July 25th showed pneumothorax increased still more in the upper portion of the right chest. The abscess cavity appeared to have filled up again, the shadow in the lower was much denser and more extensive. The adhesions were still pronounced. The foreign body was still present.

Fluoroscopic examination on July 27th showed some dislocation of the heart to the left. Considerable pneumothorax was present, the upper and middle lobes on the right side considerably collapsed. Some air was present above the diaphragmatic dome. Between this and right lower lobe adhesions were evident, extending from the right lower lobe to the lateral chest wall and there was a dense shadow about the size of a baseball in the right lower lobe. On turning the patient laterally it was definite that the consolidation in the right lower lobe was posterior in a fan shape with the greatest diameter toward the periphery.

On July 29th, the thirty-ninth day after admission, the patient coughed up a tooth fragment with blood streaked sputum. The temperature dropped to normal and so remained. There was no cough. The patient was comfortable. Stereoscope showed abscess cavity a little less full, otherwise no change. Pneumothorax was a little less marked. The temperature continued normal and on August 2nd, the forty-third day after admission and the fifty-third after extraction, the patient, while conversing with a dentist, coughed, noting something in his mouth. It was a tooth. Stereoscope taken August 3rd showed the pneumothorax about the same, the abscess cavity almost completely collapsed. No foreign body was visualized.

The patient continued to improve. The physical signs in the chest remained unchanged up to discharge seven days after expulsion of the tooth, except that the pneumothorax was being gradually absorbed. The patient spent six weeks in Arizona, returning for an examination October 31, 1922. His weight was 166 pounds. He was absolutely well and stated that he never coughed after expulsion of the tooth.

Stereoscope taken October 31, 1922, showed moderate cardiac hypertrophy. General lung radiation clear. The diaphragm on the right side showed some restriction of movement apparently being attached to the phrenocostal angle by adhesions. The right lower lobe was about two or three fingers' breadth above the diaphragmatic dome, and showed some localized haziness in the general region where the former abscess was. This was not marked and in all probability was the shadow of scar tissue.

COMMENT

Postural drainage seemed to be of some benefit but it was not marked in this case. Bronchoscopy was considered but deemed inadvisable on account of the peculiar location of the foreign body. Improvement was noted directly after pneumothorax treatment was started, culminating finally in expulsion of the foreign body. As this was followed by immediate improvement subjectively and objectively it seems fair to assume that the pneumothorax was the active agent in effecting the cure.

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Impotence in the Male: Its Practical and Scientific Treatment*

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If physicians would only understand that the organs making up the sexual apparatus respond physiologically and pathologically just like other organs in the body, the treatment of impotence would not be the mysterious or foolish method so often prescribed. What would a throat specialist advise a patient who was suffering from hoarseness due to a highly congested condition of the vocal cords? What would a surgeon advise a patient who was unable to move his elbow as a result of a highly inflamed condition of that joint? Would not both these specialists, in entirely different fields, advise immediate rest of the respective organs to get rid of the acute congestion, before making any attempt to induce the organ to perform its function? This is plain common sense. Would we not laugh at a throat specialist who would advise such a hoarse patient to talk as much as possible, on the theory that exercise of the muscles involved would tend to strengthen them, and thus restore the voice? This again is common sense.

But when we come to the treatment of impotence, we find just such a foolish method of treatment advised by many practitioners. For some reason the opinion seems to have become prevalent that the muscles, bloodvessels, nerve centres, etc., involved in the functions of the sexual apparatus, work in some mysterious manner, entirely different from those in other parts of the body.

The poor patient who has become impotent as a result of extreme congestion of the prostate and prostatic urethra, has one aphrodisiac after another thrown into his system, local stimulating treatment applied, until finally the entire sexual apparatus becomes completely exhausted, and refuses to respond to further stimulation, and the patient is left totally impotent.

Considering the entire subject of impotence from a rational point of view, the overstimulation of tired exhausted muscles and nerve centres is contrary to laws of physiology and pathology, yet this is the method employed by many practitioners, because, as stated above, the belief is prevalent that the muscles, nerve centres, and circulation of the sexual organs are for some mysterious reason different from muscles, nerve centres and circulation in every other part of the body.

Let us now consider very briefly the course of events in normal physiological erection. During the preliminary sexual excitement the parts become hyperemic. At the close of ejaculation, detumescence occurs, that is, the blood gradually leaves the parts, until finally they are in their natural state. Should the normal mechanism of coitus be interfered with by withdrawal, or similar unphysiological practices, the turgescence does not leave the parts as in normal coitus, but persists for some time. A single act of withdrawal probably does no or very little harm, but if the practice is indulged in for months or years, there occurs, as a result of the frequent long continued congestions, a state of chronic congestion of the prostate and prostatic urethra, just as is the case in diseases of the nose or throat or any other organ of the body. The same pathological condition of chronic congestion may be brought about in individuals during the sexual excitement of prolonged spooning incident to long engagements. In this later state of affairs it frequently happens that the young man calls on his sweetheart night after night and indulges in intense sexual play, during which time the entire sexual apparatus becomes markedly congested preparatory to coitus which does not take place, and the parts are left in a condition of congestion. Here again one offense probably does little harm, only the long practised or frequently repeated acts, especially where the engagement has been prolonged to several years, will end in the same condition of chronic congestion. Should such a patient find himself suffering from premature or rapid ejaculation at his first marital attempts, a certain group of sexologists would

*Read at a meeting of the New York Physicians' Association, October 24, 1923.

immediately put it down as a case of impotence due to continence, and would descant upon the evil effects of continence. As a matter of fact, such a person has not been really continent, but, on the contrary, has been *overusing* his sexual apparatus in the most shamefaced and unphysiological manner. Any observer can satisfy himself of this final outcome by feeling the congested prostate or seeing the congested posterior urethra and swollen verumontanum through the urethroscope in such an individual.

I have repeatedly emphasized one point in performing urethroscopy in such cases. The beginner may expect to see gross pathological changes or alterations in the posterior urethra. This, however, is not generally the case. It cannot be too strongly emphasized that most gross pathological conditions in the posterior urethra, such as tumors for instance, may not cause any symptoms, and certainly not impotence; but that a congestion of the parts, which might easily be overlooked by the beginner, or thought of little etiological importance, is often the real cause of impotence.

In bad cases, and indeed in most cases of long standing, the congestion is probably not limited to the posterior urethra and prostate, but even the reflex centres in the spinal cord no doubt become hyperemic and respond more quickly to reflex excitation.

What is the clinical result of all these congestions? Exactly like congestions in any other portion of the body. A congested nose will sneeze at the slightest current of air, a congested eye will blink at the slightest amount of light, and a congested larynx will cough at the slightest particle of dust, or at the slightest use of the voice. While in normal coitus, it takes a certain amount of friction before orgasm and ejaculation are reached, in the congested condition of the parts the reflex centres are so irritable, that the slightest friction of the penis is sufficient to cause orgasm and ejaculation. In extreme cases, ejaculation takes place even before the penis has entered the vagina (premature ejaculation) while in others immediately or shortly after entrance (rapid ejaculation).

There is still another very important point in this connection to which I desire to call attention. The desire for sexual intercourse depends to a large extent upon the condition of distention of the seminal vesicles. This has been definitely demonstrated in frogs, in which all desire for coitus disappears when the contents of the vesicles are squeezed out, but if they are now distended by the injection of plain water, then desire returns immediately.

Now, even in normal coitus the seminal vesicles are not completely emptied, and in abnormal coitus, as in withdrawal, they remain much less depleted. In those cases of prolonged spooning without coitus, just described, they will generally be found greatly distended. Thus we will have in these cases of abnormal coitus, a condition in which the vesicles become distended much sooner than after normal coitus, the desire for coitus returns much quicker, coitus is indulged in more often, thus tending more and more to exhaust the already overtired sexual apparatus.

One might imagine, from a consideration of the physiology and pathology just described, that the continent man ought to be tortured by very frequent desire for coitus, as his seminal vesicles would always be in a condition of extreme distention. Here again, I am happy to be able to emphasize that the sexual glands, nerve centres, etc., functionate just like these structures anywhere else in the body. The amount of saliva or gastric juice secreted is increased, not only by the actual entrance of food into body, but even by the sight or smell of food. And so it is with glands everywhere, their amount of secretion depends upon the amount of reflex stimulation, and so it is with the sexual apparatus. In the man who is physiologically continent, the amount of semen produced is comparatively small, it takes a long time to distend the seminal vesicles, and then nature takes care of this by an occasional nocturnal pollution, which is physiological once every ten days or two weeks. But the man who indulges in very much spooning, or keeps his sexual apparatus always in a state of excitement, is not truly continent though he refrains from coitus. In him, there is a large amount of semen secreted, and he really does have increased and repeated sexual desire, and finds it more difficult to restrain himself than his truly continent brother. In him, also, nature tries to come to his rescue by frequent pollutions, which serve to keep his vesicles more or less empty, and is a sign, not that he needs coitus, as many young boys believe, but that he should refrain from unphysiological sexual excitements. Treatment, as described in some of my previous publications (1, 2, 4) will quickly put an end to such pollutions.

If, in spite of repeated warnings in the way of rapid and premature ejaculations, the patient continues the abuse of his sexual apparatus, by such practices as withdrawal, etc., we have again the same result as in other parts of the body. The centres, which have at first merely become overirritated, finally become exhausted and refuse to functionate at all, and we get, as a final stage, the clinical picture of complete impotence, in which neither erection nor ejaculation takes place, although the desire may still be present. The exhaustion of the centres, is not entirely brought about by the frequent demands made upon them by coitus, spooning or other sexual excitements, but is largely due to the reflex stimuli arising from an ever present congested prostate and prostatic urethra, as well as distended seminal vesicles, which are continuously bombarding the centres with reflex stimuli. Physiologically, the centres only receive peripheral reflex stimuli during the local congestion incident to coitus, but, when the parts are always in a state of chronic congestion as before described, the reflex stimuli received by the spinal centres are so numerous that exhaustion must take place.

The same final result of complete impotence I have frequently seen hastened by misdirected advice and treatment. Many such patients are advised by their physicians that their weak erections and rapid ejaculations are purely psychic and imaginary and that they should go on trying coitus, making up their minds that they can have erections, somewhat *á la Coué*, and they will certainly be all right. Other physicians, recognizing that treatment is necessary, start at once with stimulating treatment, by socalled aphrodisiacs, electricity, sounds, etc., at the same time advising the patient to try his powers. The result in

both cases is, and must be the same, just as similar treatment applied to any other inflamed organ in the body must result in failure. We must recognize that nature is trying her best to cure the patient by sexual rest. It does not want the patient to indulge in coitus, and therefore takes away his ability to do so. If a patient under certain pathological conditions ought not to partake of food, nature will take away his appetite, and if, in spite of such warning, the patient does put food into his stomach, nature will make him vomit or give him such distress that he will not be inclined to try the experiment again.

What then is the rational as well as scientific treatment for impotence? The treatment is the same as that applied to any other organ similarly affected. The first essential is absolute sexual rest, no coitus, and certainly no sexual excitements of any kind. Bromides should be given internally to allay as much as possible sexual desire and passion. The patient must be told at the very start what the object and result of the administration of bromides is, otherwise he might think he is getting worse, when he finds his desire diminishing. He must be told that this is exactly what we want. I tell my patients that if I could put the entire sexual apparatus, centres and all, in a plaster cast, just as we insure rest to an inflamed joint, I would gladly do so. There is no danger of a permanent loss of sexual desire from the temporary use of bromides. Epileptics often take bromides for long periods of time, and they do not suffer from impotence from this cause.

The local treatment consists in prostatic massage, and the instillation of weak silver nitrate solutions into the prostatic urethra. As regards prostatic massage, please remember that poking or squeezing the organ per rectum is no more massage of the prostate than giving a man a punch in the stomach is massage of the stomach. Massage is massage whether applied to a joint, an abdominal viscus or the prostate. It is *not* the object to squeeze out every bit of secretion from the prostate. This would be *expression* and not *massage*. Massage must be gentle, especially gentle in these cases because the prostate is congested and hyperesthetic. It is impossible to describe the feel and method of manipulation, but the criterion should be the patient's sensation. Any amount of pain should be a warning either to be more gentle or discontinue altogether.

The use of instillations of silver nitrate into the prostatic urethra is to remove the congestion just as the laryngologist often swabs the vocal cords with the same drug. We do not desire any antiseptic effect of the drug, but merely its astringent and tonic action. For this reason the solution employed must be very mild, starting with a one in 3,000 solution and gradually increasing it at each treatment until a one in 500 is reached. Many practitioners employ a much too strong solution, and hence cannot get results. Pain or bleeding following the instillation is absolutely unwarranted, and does positive harm. The instillation is done with the Bangs's sound syringe.

Many years ago, while I was perfecting this method of treatment for impotence, I subjected the patient to another posterior urethroscopy after a time to make sure that all the local congestion had been removed. Many years of experience have shown me that this is not necessary, and that, when the prostate feels normal to the touch, and the urethra is no longer hypersensitive to the passage of the instrument and the instillation, all congestion has been removed. When the local congestions have been removed, the bromides are discontinued, all restrictions as to diet are removed. We now start the stimulating and developing treatment. For this purpose I employ the sinusoidal faradic current. The current is mild at the commencement, but is gradually increased until it is as strong as the patient can bear. Painful currents must be avoided. Patients are sometimes under the impression, that the stronger the current the better the result, and this will induce them to bear currents of great strength without a murmur. They must be disabused of this notion. The current should be of only moderate rapidity.

With these factors in mind, I employ the method as follows: Any form of rectal electrode is introduced into the rectum, and connected with either pole, and the other cord is connected with an ordinary medium size sound placed in the urethra and bladder. A special prostatic electrode is not necessary. The current is allowed to pass for about ten minutes. I then remove the urethral sound, leaving the rectal electrode in situ. I now apply an ordinary wet sponge electrode to the perineum permitting the current to pass for about five minutes. Then I remove the rectal electrode, and apply two ordinary sponge electrodes to either side of the penis, near the glans, and pass the current for another five minutes.

The rationale of these various applications is as follows: In the first instance, the prostate and prostatic urethra lie between the rectal electrode and the urethral sound, and are naturally stimulated. The second procedure is to raise the tone of the muscles of erection. The last procedure is to improve the sensibility in the skin of the penis, which in some cases is diminished.

The limitations of space permit the discussion of only the most common and important form of impotence. I have therefore omitted the organic and psychic forms, the treatment of which obviously depending upon the underlying cause. These have been discussed in previous publications (1, 2, 3).

In conclusion, I wish to say a few words as to the use of glandular extracts in impotence. I have tried most of them, but thus far the results have been unsatisfactory. I have, however, not lost my faith in this field of endeavor, and believe that the day will come when, in selected cases, results will be achieved. The occasionally remarkable results from testicle implantation, and the excellent results reported by competent observers from the Steinach operation, both point to the probability of approach along the lines of endocrine therapy. Moreover, the decided results which most of us have perceived from the use of extracts of the female sexual glands, bids us hope that like results will some day be obtained from the male sexual glands. Thus far, it seems to me, that somewhere in the process of manufacture something is done which seems to destroy the active principle of the male glands, so that the extract is inactive, while in the case of female glands, the active principle remains potent to a degree. A new method of administration must be devised.

The author's references will appear in his reprints.

Practical Therapeutics

CHEMOTHERAPY IN EMPYEMA

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The purpose of this paper is to present our experiences of the past two and a half years in the treatment of pleural infections by nonsurgical methods. Most of the cases cited are tuberculous individuals in whom the empyema arose as a complication in artificial pneumothorax. We have made no attempt at chemotherapy of tuberculous empyema but have confined our efforts in this condition to simple drainage by repeated aspiration. We believe that the treatment of tuberculous empyema is mainly preventive; that is not allowing a tuberculous exudate to remain indefinitely in the thorax. In this connection we should like to take issue with the orthodox view concerning the treatment of exudates occurring in the course of artificial pneumothorax. It is commonly held that this exudate may be allowed to remain indefinitely in the chest without damage to the patient. In a large percentage of the empyemas complicating pneumothorax a preexisting tuberculous exudate seemed to provide the culture media for secondary organisms, and to invite the occurrence of empyema. After encountering a number of patients in whom secondary infection of the thoracic cavity had taken place, with its severe and alarming symptoms as well as protracted course, we have made it our practice to remove fluid from the chest whenever we may find it there in any more than minimal quantities. Since starting this practice we have not encountered any tuberculous empyemas, and feel that in certain patients this condition has been avoided by keeping the chest as free as possible of accumulated fluid.

Another reason for this course lies in the fact that pneumothorax is a mechanical method of treating tuberculous abscesses and cavities in the lung and if we are to have the success with this method of treatment which it deserves the pressure conditions in the pleural cavity must be under our control constantly. The habit of allowing fluid to remain in the chest and removing it only when urgent pressure symptoms demand it takes out of our hands entirely the control of the pressure and in some cases means ultimate failure in the treatment. It is well known that in some cases when fluid is present in the chest the lung will commence to reexpand, becoming adherent to the chest wall at some point where it is bathed with the exudate, and in spite of anything we can do the process of reexpansion will continue and make treatment for the proper period of time impossible.

In some of the cases briefly described in this paper we had to deal with spontaneous pneumothorax complicating artificial pneumothorax, at which time the infection of the pleural cavity with secondary organisms took place. In most of them, however, there were no signs or symptoms of spontaneous pneumothorax and the manner in which the pleura became infected still remains a matter of speculation. It is possible, of course, that infectious material may have been carried into the chest in the process of the routine injection of air. Again it is possible that an acute infection of the upper air passages extended by continuity to the pleura, causing a small subpleural abscess which ruptured into the pleural cavity. Again, infection may have been carried into the pleural space through the lymph channel during the course of a severe cold. (Not mentioned in the paper are two patients in whom a typical lung abscess developed in a partially collapsed lung following an acute infection of the upper respiratory tract.) A final possibility is that during the course of a severe cold microorganisms carried about in the blood stream might have lodged in the pleura, and with a culture medium at hand in the form of a sterile exudate, caused the empyema.

Surgical treatment of empyema complicating pneumothorax or pulmonary tuberculosis has a large mortality, and in those patients who do not die very shortly following the operation we frequently have an undesirable wound which will continue to discharge for an indefinite period. These wounds often become infected with saprophytic organisms, giving rise to exceedingly vile odors which are a source of extreme annoyance to the patient and those about him. The reason why surgical drainage with rib resection is not successful is that there is no way to get the collapsed lung reexpanded. A lung that has been collapsed for tuberculosis for a period of time does not have the elasticity of a normal lung. In chronic empyema in nontuberculous persons it is frequently found that the lung has not only lost its elasticity but is covered with a thickened, shrunken pleura. With atmospheric pressure being exerted down the bronchial tree, and also through the opening in the chest wall, there is no force favoring reexpansion. Drainage alone does not of necessity get rid of infection. In some of our pneumothorax patients we did not desire reexpansion of the lung because it was considered advisable to continue the collapse for the tuberculosis.

The technic employed in drainage of fluid from the chest has been, in our opinion, a great factor in whatever success we have had in this work. In order to empty completely the chest by aspiration, or otherwise, it is necessary to aspirate at the very lowest point, which, with the patient in an upright position, is impossible to do. Our method consists of placing the patient on the affected side, his body on one table and shoulders on another, with a space of six inches between the two tables. The chest is then punctured from beneath. In this way the side of the chest is made temporarily the lowest point—the logical point for drainage. Before the needle is withdrawn the patient is made to roll over on his back and the possibility of pus following in the needle's track and causing subcutaneous abscess is considerably minimized. X ray plates made of the patient before and after puncture show that the chest can be completely emptied of fluid in this manner

This technic is used for the removal of any kind of fluid from the thoracic cavity as a routine.

The ordinary Potain aspirator with its many connections and pump has proved an unsatisfactory instrument in our hands. When one has exudate to remove from three or four patients in an afternoon, as frequently happens in our practice, the laborious use of the hand pump which is part of a Potain equipment becomes exasperating. We have used a home made apparatus devised by the late Dr. A. G. Shortle, which so far as we know has never been described in print, and which has been more than satisfactory. An ordinary gallon bottle, usually one in which some drug has been purchased, is fitted with a rubber stopper through which a glass tube has been inserted. A piece of rubber tubing some fifteen inches in length is connected to this. A strong artery forceps is used to clamp off the tube. In creating a partial vacuum the bottle is rinsed with denatured alcohol and after standing a few minutes a match is applied, which results in a rather sharp explosion accompanied by a shooting of flame from the neck of the bottle. At this instant the stopper, with the tube clamped off, is quickly put in place and one has a sufficient negative pressure in a gallon bottle to withdraw two quarts of fluid from the chest. It is very seldom that one will need a larger capacity than this.

REPORT OF CASES

Case I.—L. H. S. was a sugar free diabetic who had been under treatment since December, 1919. A successful collapse had been achieved with symptomatic relief. Tuberculous exudate developed shortly after pneumothorax was begun but acute symptoms of this exudate subsided after a few weeks. Enough fluid was withdrawn to relieve any mechanical disturbance caused by displacing the heart, etc., and the rest of it was allowed to remain in the chest where it caused no discomfort or symptoms. Early in October, 1920, the patient contracted a severe cold from which he had not entirely recovered when he reported for his routine injection of air. He had a slight chill the day before his treatment. Two days later when I was called to see him he had a high temperature, dyspnea and a great increase in the level of the fluid which had been constant for a number of months. I took off enough air to relieve the dyspnea and cardiac disturbance and the next day removed by aspiration 1,500 c. c. of fluid which, on culture and smear, contained Staphylococcus aureus. Enough air was introduced to leave a slightly negative pressure. Drainage by aspiration was done as often as fluid accumulated, which in the beginning was every day or two. Lavage of the thorax with one or two litres of normal saline was done following removal of the pus. The temperature remained high and, along with it, the patient's general condition became steadily and alarmingly worse. In the dilemma an attempt was made by the injection of a neutral solution of sodium benzoate to inhibit bacterial growth, but this had to be discontinued on account of irritating the pleura as well as the entire lack of success. Next a neutral solution of anthranilic acid was tried—with the same result. (This compound shows a much more marked bacteriostatic and bactericidal action than the closely allied salicylic or benzoic acids. Its toxicity appears to be very low. Up to the present time we have not been able to demonstrate it in the blood following intravenous application. This may be due either to a lack of proper tests on our part or possibly, also, to a change in the compound which would make its detection impossible. Further work is under way with this material.) The aspirations were continued and our persistence was rewarded by some reduction in temperature and improvement in the general condition. At this time sugar reappeared in the urine and the temperature rose to its former level. Typical staphylococcic pus accumulated with the same rapidity as in the beginning.

Churchman's work on the sterilization of infected joints with gentian violet suggested the use of this compound in the pleural infections. In the absence of any accounts in medical literature of the use of this dye in the chest, or its possible toxicity when used in this way, it was thought wise to test the absorptive power of the pleura for anilin dyes by injecting methylene blue in the chest and noticing the time that elapsed before it appeared in the urine. From work done previously I knew that absorption from the healthy pleura is very prompt—the dye appearing in the urine in from thirty to forty minutes—and that this absorption from pleural cavities that had been the site of tuberculous exudates was greatly delayed—the dye sometimes not appearing for twenty-four to thirty-six hours. (In one patient the dye appeared in small quantities in the urine for a period of five weeks, and was demonstrable in the exudate during this time.)

The first injection of gentian violet results in the accumulation of a very thick, deeply stained fluid which is difficult to remove through an aspirating needle. It is our practice to dilute this with normal saline and then attach the aspirating bottle. As a rule injections of several ounces of saline will make it possible to get out twice this amount of material, when another injection of saline will have to be made. This procedure is continued until the chest is entirely empty. The first few aspirations following the use of the dye are very tedious and may take as long as an hour each. Mixed in with the material aspirated one often finds shreds which will block up the needle and have to be removed by the injection of saline. During this procedure care must be taken to avoid either too great intrapleural pressure by injection of too much saline or a sudden drop in the pressure by removal of too much fluid before air is introduced to replace it. It is also not wise to expect any marked change for the better following the first injection of the dye.

In this first patient the blue appeared in the urine sixteen hours after injection into the thorax and it was decided that the gentian violet could be safely allowed to remain for the same length of time. One hundred and twenty c. c. of saturated aqueous solution of the dye was injected following removal of the pus and lavage with normal saline. A slight improvement followed, with no reaction, pleural irritation or other symptoms. Two days later the process was repeated but the dye allowed to remain twenty-four hours. Since then we have never allowed the dye to remain less than twenty-four hours and usually allow it to remain thirty-six to forty-eight hours or longer. At the same time careful atten-

tion to the diet resulted in the disappearance of sugar from the urine and the patient again improved. Later, when the fluid was entirely clear a series of dietetic indiscretions resulted in another appearance of sugar in the urine and coincident with this, the empyema flared up with all its old intensity. The dye treatment was carried through faithfully until there were no further formations of fluid in the chest, either serous or purulent. There has been no further recurrence of the empyema despite indiscretions on the part of the patient, and his chest has been dry for over a year. A tuberculous process in the other lung has extended to the point where, together with his diabetes, it will probably end the patient's life shortly.

Case VII.—R. G., a physician who came into our hands in September, 1920, gave a history of having had a spontaneous pneumothorax in the left side eighteen months previous, with a low grade streptococcic empyema following. He was aspirated several times and the aspirations were discontinued after several dry taps. It was assumed that purulent fluid was no longer present. Our entrance examination revealed, in addition to a well marked ulcerative, tuberculous lesion in the right upper lobe, an area of absent breath sounds, flatness on percussion and other symptoms of fluid, extending from apex to base and from the midclavicular line to the posterior axillary line on the left. The x ray showed an intense white shadow corresponding to the area described. Having seen signs and x ray shadows such as this caused by a greatly thickened pleura we assumed that we had such a condition here, taking into consideration the history of repeated unsuccessful attempts at aspiration. The patient did fairly well until February, 1921, when there was a marked increase in his temperature and physical examination gave signs of pneumothorax over the area of supposedly thickened pleura. This was confirmed by x ray. Considering the history of a marked increase in the amount of sputum it was obvious that he had a bronchial fistula. Treatment with gentian violet was begun and the sputum was colored with the dye. During the course of treatment a needle track infection took place and we had not only a bronchial fistula but one through the chest wall to deal with. Routine treatment resulted in the closing of both fistulæ and the lung had reexpanded to within an inch of the chest wall when the patient decided to return to his home. He was warned against rib resection or any other treatment than that which was giving such satisfactory results. We heard later that contrary to this advice surgical drainage was done, followed by death in eight weeks.

Case XVIII.—R. K. had had influenza and pneumonia, complicated by empyema, in February, 1920. The empyema evidently was not discovered because drainage was not instituted and the patient gave a history of very suddenly expectorating over a quart of pus. From that time on this man expectorated an average of eleven cigar boxes of pus a week. He came into our hands the middle of November, 1921, and when first seen by us showed signs of hydropneumothorax on the right side. The general condition was very bad, with both feet and legs edematous. Temperature varied from 99.5° to 101° daily. Incessant cough and expectoration of very foul smelling pus completely destroyed any appetite for food and gave the patient little rest. At the first aspiration we removed two litres of pus which on culture contained such a large number of organisms that it was impossible to determine the one originally responsible for the empyema. Gentian violet solution was injected at once and removed the next day, together with another litre of pus. A few days later the dye was injected again, to be removed after forty-eight hours. Within ten days the exudate was serous and the use of the dye was discontinued. By this time cough and expectoration had ceased and they have not returned. The temperature dropped to normal and for the first time in fifteen months the patient could sleep undisturbed. Within three months there was no longer any fluid present in the chest. The patient developed a voracious appetite and gained over fifty pounds. After the fluid ceased to accumulate we tried by regular aspirations at two week intervals to pull the lung out to the chest wall. It was our practice to reduce the pressure in the pleural cavity as low as the patient could tolerate it but after six or eight months of this we found that it was impossible to stretch the thickened pleura and further attempts to bring the lung out were discontinued. At one time we considered the advisability of doing a thoracoplastic operation in order to make the chest wall fit the collapsed lung but the excellent general condition of the patient made us doubt the wisdom or necessity of such a procedure at this time and nothing further was done. It will be of interest to note how long a sterile pneumothorax may remain in the chest without causing any trouble. One seldom sees a more striking recovery than this patient has made.

Case XX.—L. B. developed a lung abscess following tonsillectomy for which he was operated on in Chicago in 1919. He came under our observation in the spring of 1921 with a discharging fistula on the right side opposite the fifth dorsal vertebra. Purely as an experiment a concentrated alcoholic solution of the dye was injected through the fistula into the abscess. The dye proved very irritating to the bronchial mucosa but the amount of sputum and discharge were so diminished by its use that the patient demanded that we continue it. After eight or nine injections of the dye the fistula through his back closed and he left Albuquerque in the fall of 1921 for another western city where he went to work. At the last report we had he was free of symptoms and enjoying good health. (This case is added to this series to show that direct application of the gentian violet to the purulent processes in the lung itself may be safely undertaken.)

Further work along this time will be reported in a later paper.

SUMMARY OF CASES*

Case No. Condition.	Infecting Organism.	Remarks.
II. Spontaneous pneumothorax complicating artificial.	Micrococcus tetragenus.	Lung reexpanded; patient working.
III. Pleural infection during severe cold.	Streptococcus.	Lung reexpanded; patient working.
IV. Mode of infection unknown. Pneumothorax patient.	Staphylococcus aureus.	Complicated with malaria; no results.
V. Pneumothorax patient. Mode of infection unknown.	Staphylococcus aureus.	Lung reexpanded; patient apparently well.

*Complete reports of these cases will appear in the author's reprints.

Case No. Condition.	*Infecting Organism.*	*Remarks.*
VI. Spontaneous pneumothorax complicating artificial.	Staphylococcus aureus.	Improved, but left community before treatment was concluded; result unknown.
VIII. Artificial pneumothorax. Mode of infection unknown.	Bacillus influenza?	Lung collapsed; sterile exudate; general condition good.
IX. Artificial pneumothorax. Onset of empyema during course of severe cold.	Staphylococcus aureus.	Lung reexpanded; patient working.
X. Artificial pneumothorax. Empyema followed cold.	Staphylococcus aureus.	Lung reexpanded; patient working.
XI. Artificial pneumothorax. Follicular tonsillitis.	Streptococcus.	Lung reexpanded; patient working.
XII. Artificial pneumothorax. Empyema during course of acute cold.	Streptococcus.	Lung reexpanded; patient apparently well.
XIII. Artificial pneumothorax. Mode of onset of empyema unknown.	Streptococcus.	Lung reexpanded; patient working.
XIV. Artificial pneumothorax. Mode of onset unknown.	Streptococcus.	Patient died of nephritis.
XV. Artificial pneumothorax. Empyema following severe cold.	Streptococcus.	Lung reexpanded but tuberculosis still active.
XVI. Artificial pneumothorax. Mode of onset unknown, probably lung abscess.	Mixed infection.	Complicated with malaria; patient died.
XVII. Spontaneous pneumothorax complicating tuberculosis.	Unknown.	Complicated with malaria; patient doing well, but not completely recovered.
XIX. Empyema following influenza pneumonia.	Streptococcus.	Lung reexpanded; operative fistula in chest wall healed; patient well.

SUMMARY

This work may be criticized from the point of view that possibly the results have been due to repeated and thorough emptying of the chest by simple aspiration and had nothing to do with the use of the dye. On the other hand, we have seen the temperature drop in twenty-four hours from over 104° to normal following one of the dye treatments, which would hardly take place with simple aspiration. Our patients, once the dye was used, demanded that its use be continued because they had universally felt better immediately after the gentian violet therapy was begun, and also complained about feeling worse when its use was not repeated frequently enough. It may very well be that the same persistence with ordinary aspiration and lavage would in a number of these cases have produced results. In many of them, however, the condition of the patient was rapidly growing worse and the patient himself would not tolerate attempts at treatment without the dye.

After this work had been under way for some time several reports of the use of gentian violet in empyema appeared, and we determined to withhold a report on our work until we had some end results to present. Cases II, III, V, IX, X, XI, XII, XIII, XV and XIX show definitely that a reexpansion of the collapsed lung can be brought about with obliteration of the pleural cavity so that recurrence of this condition is impossible. This was one of the points about which we were most anxious to have some degree of certainty before making any report.

Our experiences have shown us that gentian violet in any strength solution may be used with impunity to combat infections. In aqueous solution the dye seems to cause no irritation or destruction of tissues and in a period of two and a half years we have noticed no deleterious effects, either locally or constitutionally, from the liberal use of this dye.

Fortunately most of the infections with which we have to deal in the pleural cavity are caused by gram positive organisms. This was almost universally the case in our series. We feel satisfied in our own minds that the possibility of empyema need no longer deter any of us from using pneumothorax therapy, as in by far the larger percentage of cases this complication may be successfully treated. The coexistence of malaria and secondary infection in the chest is a vicious one and should be watched for constantly.

The existence of bronchial fistula or operative or accidental fistulæ through the chest wall are not only not contraindicative to chemotherapy but seem to be an indication for it. We have reached the conclusion that when the infective organisms are killed prompt healing of the fistulæ occur. It is difficult to conceive of a more nearly ideal method of achieving this result than by the use of some potent chemotherapeutic agent such as gentian violet.

THERAPEUTIC NOTES

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TREATMENT OF LEPROSY

News has recently come to hand from Indo-China of continued favorable results obtained in the treatment of leprosy with intravenous injections of Chaulmoogra oil and an emulsion of the oil taken *per os*. After considerable clinical experience, Lamoureux has found that the exhibition *per os* of Chaulmoogra oil in emulsion in a normal soda solution in no way decreases its efficacy and is advantageous in that it is well tolerated by the digestive tract, so that considerable amounts can be taken for a long time—more than ten c. c. a day. The intravenous injection of the emulsion is more active in the acute phases of the disease and may bring about retrogression without ulcerations or intense congestive lesions. The continued use of the drug will keep the leprosy in check for more than two years, which is longer than the phases of latency usually observed in the ordinary evolution of the disease. If the drug is stopped, thus allowing the affection to run its course, acute accidents are prone to develop, so that it is essential to keep the organism impregnated with the drug, while at the same time no danger from accumulation need be feared.

By using progressively stronger percentages—three per cent., six per cent., twelve per cent., and twenty-five per cent. of the emulsion—Lamoureux has been able to reach much higher doses than those given by Noc and Stevenel. The only untoward occurrence incident to intravenous injections is early nitritoid crises—similar to those arising with the arsenical preparations, characterized by a temperature of 30° to 40° C. (102° to 104° F.) and severe chills, followed by sweating, but these crises may be prevented by previously injecting three or four drops of a one to 1,000 solution of adrenalin.

TREATMENT OF SLEEPING SICKNESS

Details have recently been given by the Belgian Ministry of the Colonies of the results of recent experiments made on the Congo in regard to the treatment of sleeping sickness with the new product

"205." This has been carried out in the Belgian Congo by Dr. Walravens, chief of the laboratory at Elizabethville, who has been assisting Professor Kleine in the district of Lake Noero, and Dr. Van den Branden and Dr. Van Hoof, who have been experimenting at Leopoldville for over a year. The results obtained have been favorable.

The new product has an advantage over atoxyl and hemetic in giving the subject a longer immunity against the action of the specific bacterium. Fewer injections are necessary, two or three being as a rule sufficient, while of atoxyl eight or ten are required. It has not yet been demonstrated that the remedy is of the same efficacy in the case of patients in the second phase of the disease. In the third phase, and when the bacteria have penetrated to the central nervous system, it has no effect. Though "205" has proved to be a useful remedy, there is room for improvement, while its use is not without danger, for it may cause renal disturbances.

I would add that another product, produced by the Rockefeller Institute—tryparsamid—has been experimented with by Dr. L. Pearce. Her work, which has been followed with attention by the Belgian physicians, appears to have given interesting results, but this product may give rise to unfortunate consequences for the eyes.

THYROID MEDICATION IN ARTHRITIS DEFORMANS

At a recent meeting of the Paris Medical Society, Dr. L. Lévi reported the case of a female, sixty-three years of age, presenting an arthritis deformans of the left knee that had been present for twenty years. The joint was greatly enlarged and deformed, while the skin covering it contained large varicose veins. Movement was difficult and painful. Lévi finding that the patient was a thyroid subject, exhibited thyroid medication with the result that improvement began the first week; the circumference of the knee decreased, likewise the pain and cracking of the joint, while the patient was able to walk as she had not done for years. From these immediate results the medication became a means of diagnosis just as myxedema.

Among the thyroid signs presented by this patient was complete absence of eyebrows. Upon the administration of thyroid medication these at once began to grow, while the hair, which had been falling out, began to grow and the patient, who was obese, lost weight. Recalling other cases in which the patient became more youthful in appearance, Dr. Lévi supposes that in the complex problem of early senility, or even when physiological, if the various glands—including the genital glands—play an unquestioned part, a foremost place should be given the thyroid. From the physiological viewpoint, it was pointed out that the hands and feet were hot, the face congested, the eyes brilliant and oppression marked. Five milligrams of powdered thyroid were given four times daily the first week, but afterwards, on account of the nervousness and excitement produced, only six doses were given a week.

The patient's son was also treated for numbness of the right ring finger, spasmodic asthma, asthmatiform crises, stiff legs, pain in the hands, gastrointestinal disturbance, dry eczema of the legs, startled sleep, and poor general health. Thyroid medication completely transformed this patient, who said he had become ten years younger; but as in the case of the mother, the decrease of memory, high blood pressure, and tachycardia did not improve. Lévi thinks that these cases confirm thyroid heredity.

HYPERGLYCEMIA PRODUCED BY ADRENALIN TEST

Since we are on the subject of the endocrine glands, I would say that Professor Labbé, of Paris, recently read a paper before the Biological Society of Paris, in which he stated that an injection of one milligram of adrenalin in cases of Basedow's disease usually produced hyperglycemia and a higher pulse rate than that obtained in normal subjects. Blood pressure is not usually increased, while the oculocardiac reflex is inverted in all cases, but there was no glycosuria, local reactions, or subjective disturbances. In sympathicotonic subjects the adrenalin test does not usually give rise to marked hyperglycemia; on the other hand, the blood pressure increases, likewise the pulse rate with inverted oculocardiac reflex. This test distinguishes sympathetic disturbances from those due to endocrinosympathic disturbances, otherwise Basedow's disease.

PHENOLSULPHONEPHTHALEIN TEST IN PROSTATECTOMY

Negro and Colombert have recently stated that in their opinion the phenolsulphonephthalein test is superior to any other as a prognostic indication of prostatectomy. To the data obtained by this test it is of course necessary to add the results obtained from examination of other viscera in order to eliminate any other contraindications for this operation that may offer themselves, independently of a good renal function. The phenolsulphonephthalein test only gives precise data in respect to the ureic function of the kidneys, these being less exact when some circulatory lesion coexists. The test is advantageous in that it is simple. Operation can be safely done if at least forty-five per cent. of the drug is eliminated during the first hour following its intravenous introduction, otherwise prostatectomy is contraindicated.

UNEQUAL PUPILS

In a recent very excellent study (*Thesis,* Paris, 1923) Dr. W. Jullien finds that if all anisocories due to lesions of the cornea or intrinsic ocular lesions are eliminated, cases of unequal pupils can be divided into two classes, namely—small and large unequal pupils. The first are discreet and will be overlooked if not sought for; they are fleeting, appearing one day and disappearing the next, only to be found later on perhaps with a different aspect. The reflexes remain normal. Tuberculosis is to be incriminated in the same way as many other pulmonary or general affections. Large unequal pupils are usually striking, hence their diagnosis is easy and being permanent, they are found at each successive examination without any change. They are usually accompanied by a change in the reflexes. Pulmonary tuberculosis is rarely the cause, syphilis occupying the all important place in the genesis of these anisocories, and to a lesser extent those affections acting on the parasympathetics or their nervous origins. Although Jullien admits that this distinction is somewhat schematic, it nevertheless covers the great majority of cases.

Historical Medicine

Thomas Paine on Yellow Fever

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Writing in 1806 the great English-American-Frenchman, Thomas Paine, tells us that "A great deal has been written respecting the yellow fever . . . and what I am going to suggest in this essay is to ascertain some point to begin at in order to arrive at the cause."

Sound philosopher as Thomas Paine was, it is no wonder we find him searching strenuously for the cause of this disease, so as to understand the fundamental principles associated with, or underlying, a disorder which had far more devastating effects than either the Anglo-American war or the French Revolution.

Paine, who had fought so hard to establish the American Republic, and whose hand is to be seen so plainly in the phrasing of the Constitution, was gravely concerned at the fearful epidemics which were being attended by such a very high mortality.

Matthew Carey gives us but a faint idea of the state of things in Philadelphia in 1793 when he tells us that out of a population of forty thousand over four thousand persons died from this terrible disease.

Other epidemics occurred in 1798, 1799, 1802, 1803, and 1805, and in 1806 Paine published his essay "as belonging to natural philosophy rather than medicinal art, and therefore I say nothing about the treatment of the disease."

Paine was no quack; he appreciated the difference between the science and the art of medicine—a difference that deserves to be emphasized properly in these days, of pseudoscience, when vaccines are boosted out of all proportion to the benefits which can possible accrue from their use. It may interest readers to know that it was no uncommon practice for philosophers in the seventeenth and eighteenth centuries to take an active part in connection with medical as well as other sciences, for as I pointed out in *The Practitioner* for February, 1924, "The Invention of Injection into the Veins is given to Sir Christopher Wren."

The Hon. Robert Boyle has a paper on queries and trials proposed to Dr. Lower, to be made by him for the improvement of transfusing blood out of one live animal into another." It strikes one oddly to find Sir Christopher Wren, the great architect, proposing experiments which anticipated our modern methods of treating syphilis by over two hundred years!

The Hon. Robert Boyle, who as director of the East India Company took important steps in connection with the propagation of Christianity in the East, was a great scientist, and founded with Wren and others the Royal Society of London.

To enable us the more adequately to appreciate Paine's efforts in elucidating the mystery associated with yellow fever, it may be worth while quoting an authoritative statement made as late as 1900.

"Negroes and Mongolians are little susceptible to yellow fever, and it is noteworthy that strangers are the more liable to be attacked, the farther north or south from its area they have been born."

"New arrivals are more liable to contract the disease."

"The area of distribution is limited to the sea coasts, and banks of the great rivers."

"For the production of yellow fever a dense population is necessary, as also a temperature of above 70° F., a moderate amount of moisture in the atmosphere, and a low altitude."

"The yellow fever poison can be transported further by sea than on land, and may be carried by clothing, bedding, etc., which may retain the poison for a very considerable time."

Thomas Paine tells us that "Yellow fever always begins in the lowest part of a populous mercantile town near the water, and continues there without affecting the higher parts. The sphere or circuit it acts in is small, and it rages most where large quantities of made ground have been made by banking out the river for the purpose of making wharfs."

"The appearance and prevalence of the yellow fever in these places being those where vessels arrive from the West Indies, has caused the belief that the yellow fever was imported from there."

"Here," says Thomas Paine, "are two causes acting in the same place: the one the condition at the wharfs which being new made on the muddy and filthy bottom of the river is different from the natural condition of the ground in the higher part of the city, and consequently subject to produce a different kind of effluvia or vapor: the other is the arrival of vessels from the West Indies."

He goes on to point out that in the State of Jersey there was no arrival of shipping and consequently no necessity to build wharfs. "This," he adds, "does not decide the point, as to the immediate cause of the fever, but it shows that the species of fever is not common to the country in its natural state."

The disease seems to have been described for the first time about the year 1647 when it was encountered in the West Indies to which parts together with the adjacent coast of North and South America it seems peculiar.

It may be of some interest to know that the town in which this article is written, namely Swansea, is the only one in Great Britain where an epidemic has occurred.

The trade at that time, 1856, between Swansea and the West Indies was very considerable, a large fleet of specially designed boats being actively engaged in the copper ore trade.

Most probably the mosquitoes were imported together with some very mild cases, and on arrival the

insects were quick to detect individuals ready to respond to their vicious bites. These specially built boats were good craft and covered the distances under favorable circumstances in a very short time.

A friend of mine who served on that trade tells me that he covered the distance from here to the Barbadoes in thirteen days—a period well within the time necessary for the full development of the organism together with the incubation period of the disease in a person leaving the West Indies in a fit condition. This friend points out that there were more cases of yellow fever in wooden than in iron boats and also that there was more bilge water in the wooden boats than in the iron craft, so that if the larvæ required such opportunities for development, they were supplied to the full extent in the wooden boats.

He also informed me that it fell to his lot "when everybody else had fled," to look after the second mate who was ill with yellow fever. They occupied the same cabin, he sleeping in the upper berth so as to be at hand in case of any emergency. They were treated as lepers, their food being handed in at the end of a pole.

Fortunately for him mosquitoes did not bite him, or even if they did the effect was trifling, though all the crew had their eyes nearly "bunged up."

For prevention he always took quinine and a lime squeezed into a glass of water, while he was very careful about the evacuation of his bowels.

Thomas Paine seems to have been interested in the history of the disease, but finds that "no old history, that I know of, mentions such a disorder as the yellow fever."

One interesting point he seems to be very definite on, and that is: "A person seized with the yellow fever in an affected part of the town, brought into the healthy part, or into the country and among healthy persons, does not communicate it to the neighborhood or to those immediately around him."

A statement of this sort clearly anticipates the finding of the Yellow Fever Commission of the United States Army, which discredits the belief in the transmission by fomites.

This philosopher concludes that if the disease be not spread by contact when cases are moved into the higher reaches it is absurd to blame the West Indies at a distance of more than a thousand miles as the great distributing centre for the American coast merely by contact.

Thomas Paine satisfies himself therefore that:

"First, the yellow fever is not a disorder produced by the climate naturally, or it would always have been here in the hot months; the climate is the same now as it was one hundred years ago; there was no yellow fever then, and it is only within the last twelve years that such a disorder has been known to America.

"Secondly, the low grounds on the shores of the rivers, at the cities, where the yellow fever is annually generated and continues for about three months without spreading, were not subject to that disorder in their natural state, or the Indians would have forsaken them; whereas they were the parts most frequented by the Indians in all seasons of the year, on account of fishing."

He is impressed by the fact that some new "circumstance" as he calls it has been introduced, and forthwith proceeds to find out what it is. The coming of the white people, their building of towns, their clearing lands, levelling hills and filling up valleys are, he points out, "all new circumstances which are unaccompanied by yellow fever. No alteration," he adds, "made on dry land produces the yellow fever; we must therefore look to those alterations that have taken place between wet and dry, between land and water."

At the period when Paine was writing great alterations had taken place along the shores of the rivers at New York and also at Philadelphia on account of the rapidly developing commerce in those parts; for this commerce a large amount of work had been done and the ground very considerably disturbed in order to erect wharves to discharge the shipping. "It is only in such parts of the shores where these alterations have taken place that the yellow fever has been produced. The parts either on the East or the North River where no alteration has taken place do not produce the yellow fever."

He gives us this further interesting information: "Besides several new streets gained from the river by embankment, there are upward of eighty new wharves made since the war; the consequence of which has been that great quantities of filth and combustible (sic) material deposited in the muddy bottoms of the river contiguous to the shore, and which produced no ill effect while washed twice every twenty-four hours by the tide water, have been covered up with new earth and pent up and the tide excluded. *It is in these places, and in these only, that the yellow fever is produced.*"

I have italicised this last sentence in order to show how very definitely Paine seems to have localized the trouble and how very near to the whole truth he had arrived.

The history of medicine contains several instances of close approximations to the truth, the actual arrival being delayed for centuries. About the most striking instance of this is to be found in connection with Harney's discovery of the blood, for Aristotle makes statements in his works suggestive of, if not actually referring to, a circular movement.

Having definitely localized the spots, or disease spreading centres, Thomas Paine tells us that "the impure air or vapor that generates the yellow fever issues from the new made earth or ground raised on the muddy bottom of the river, and which impregnates every fresh body of air that comes over the place as when air becomes offensive in smell when it passes over vegetable or animal matter in a state of putrefaction."

"The muddy bottom of rivers contains great quantities of impure and often inflammable air (carburetted hydrogen gas) injurious to life and which remains entangled in the mud till it be let loose."

In connection with this inflammable gas Thomas Paine describes some experiments he carried out with General Washington and General Lincoln in the year 1783, when Washington had his headquarters at Rocky Hill, New Jersey.

"A scow had been stationed in the mill dam, and General Washington, General Lincoln, and myself, together with three or four soldiers with poles were put on board. General Washington placed himself

at one end of the scow, and I at the other: each of us had a roll of cartridge paper, which we lighted and held over the water.

"When the mud at the bottom was disturbed by the poles, the air bubbles rose fast, and I saw the fire take from General Washington's light and descend thence to the surface of the water."

Thomas Paine having arrived at such a definite conclusion thinks he ought to make some suggestion in order to prevent the recurrence of these epidemics. His great idea is to give up covering up the mud and to build the wharves by means of stone arches so as to allow of the mud being washed by the tide twice a day.

The length of Thomas Paine's disquisition on yellow fever is in marked contrast to the short and poverty stricken ideas of the "Authorities" writing one hundred years afterwards. Had his work been followed up by scientifically minded medical men one feels certain that the truth would have been discovered much earlier than it was.

The tendency today is to imagine that our predecessors were very limited in their ideas, but the more one consults the ancient folios the more one is convinced that they contain truth nuclei of very great value, which only requires to be cleverly handled to give us revelations beyond our wildest dreams.

Mendel, the Apostle of Heredity

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London

Of the very great men, that is, men of original genius, who failed to come into their own during life, in modern times Mendel is easily the most conspicuous example. His theories, or rather the wonderful facts he worked out with regard to heredity, and which should have rightly placed him on a pedestal with Pasteur, Galton, and Darwin, were forgotten and not known to the scientific world for years after his death. It is no exaggeration to say that Mendel's discoveries were epoch making and opened a new era in the science of heredity.

Johan Mendel, like Pasteur, was of humble origin, his father being a small peasant proprietor much interested in fruit culture. He was born in Austrian Silesia in 1822, in the same year as Francis Galton, the great British student of heredity. When he was twenty-one he was admitted as a monk into the monastery of Brünn in Bohemia, and was given the name of Gregor. In 1851, having manifested a great gift for scientific work, he was sent by the religious order to which he belonged to the University of Vienna, where he studied physics and natural science. Returning to the cloister, he acted as a teacher of science in the Realschule of Brünn, occupying his spare time in making experiments with peas and other plants in the garden of the monastery. In so doing, he made his great discovery with regard to heredity, and reached the very important conclusion, i. e., the rule, referred to briefly as Mendel's law. In 1866 this was published in the *Proceedings of the Natural History Society of Brünn,* but it was never heard of outside this place, for the remainder of the century. It was not until 1900 that DeVries in Holland, Correns in Germany, and Tschermark in Austria, unearthed Mendel's work and confirmed it.

Mendel was a remarkable man in many directions, an able teacher, a good man of business, a keen chess-player, and an investigator with an infinite capacity for taking pains. He was an earnest experimenter. Mendel made observations on heredity in bees, and it is especially to be deplored that no papers bearing on this branch of research have been found. He had fifty hives in the garden of the cloister and experimented in the crossing of queens of different species. It has been suggested that Mendel may have destroyed any notes he made, amid the disappointments of the later years.

According to Professor J. Arthur Thomson, there are three foundation ideas in Mendelism. The first is the idea of unit characters, that the inheritance in part at least is made up of numerous more or less clear cut, crisply defined, nonblending characters, which are contained in some of the descendants as intact items, without merging and without dividing. If a man has his fingers all thumbs, with two joints instead of three, this unit character of brachydactylism will be continued in a certain proportion of his descendants. Since the reign of Charles I, some of the descendants of one Jean Nougaret have shown the peculiarity known as night blindness, "the inability to see in a faint light." The long persistence of the Hapsburg lip in the royal houses of Austria and Spain is well known. Sometimes the character is quite trivial, as, for instance, a lock of white hair. Sometimes it is very important, as, for example, a tendency to bleeding in males. The unit characters have their representatives in the nuclear rods or chromosomes in the egg cell and sperm cell, and these representatives are called factors, or genes, or determinants.

The second big idea in Mendelism is dominance. If a Japanese waltzing mouse, with its constitutional peculiarity of dancing round and round on the slightest provocation, is crossed with a normal mouse, all the offspring are normal. This is technically expressed by saying that the waltzing characteristic is recessive, while normality is dominant; but one cannot tell beforehand whether a given character will be dominant or recessive. When the hybrid, apparently quite normal mice are inbred, their offspring show twenty-five per cent. of pure waltzers and seventy-five per cent. of normals. If these waltzers of the second filial generation are bred with others like themselves, they produce only pure waltzers. If the normals of the second filial generation are inbred, a third of them will produce pure normals, but the after two thirds will produce normals and waltzers in the previous three to one ratio. This is the Men-

delian rule. One might sell one of the second filial waltzers as a pure waltzer, though its parents were normal, as also was one of its grandparents.

There may be mentioned half a dozen examples of characters which show Mendelian inheritance, placing the dominant first in each case; hornlessness and the presence of horns in cattle, normal hair and long angora hair in rabbits and guineapigs, crest and no crest in poultry, bandless shells and banded shells in the woodsnail, tallness and dwarfness in peas—it was with peas that Mendel made his classical experiments, susceptibility to rust and immunity to this disease in wheat. But no one knows why one character should be dominant and another recessive. At the beginning of each individual life when the egg cell is fertilized, usually an equal number of hereditary items is contributed by each parent. If one of the parents has a dominant character, like a tendency to early cataract, which the other parent has not, the unfortunate probability is that the offspring will show the dominant character. Mendel supposed that the offspring produced in equal numbers two kinds of germ cells, one contingent with, and the other contingent without, the factor or gene for the dominant character. Now, if the said offspring should marry another with similar history, the likelihood is that three fourths of the grandchildren would show the tendency to early cataract.

Professor Thomson points out that there may be other modes of inheritance besides the Mendelian mode. Thus blending may occur in some cases, but every year sees a further demonstration of Mendelism, and the discovery has put into the hands of breeders and cultivators a method by which desired results can be reached both quickly and surely. Heredity has made a great stride towards becoming an exact science.

The modest unassuming and unknown Abbé Mendel, who passed his life in the out of the world little town of Brünn, was one of the great discoverers of the world. He showed the way to a goal which although it has not been quite reached, has yet in its results been most wonderful and beneficent. To breeders and agriculturists it has been of the greatest value and it has blazed the trail to further discoveries in human heredity which may almost revolutionize medical science.

Mendel's law is an argument in favor of diathesis, or the inheritance of a susceptibility to certain diseases or conditions of body or mind which were dominant in a parent or an ancestor. If the influence of diathesis is accepted in its entirety, prevention of certain diseases or conditions will be rendered more easy, and even treatment will be facilitated. Although Mendel during his life was obscure, probably not even appreciated by those among whom he lived and worked, he will be acclaimed by posterity as one of the brightest lights of the age.

Contributors to the Science of Medicine

PAUL EHRLICH

Paul Ehrlich was born on March 15, 1854, at Strehlen in Silesia. Although he came of a family that had already contributed a number of celebrities to science, among them the famous Karl Weigert, who was a cousin of Ehrlich, the latter was but an indifferent student at school and later at the University of Breslau, where he received his academic education. When he went to the University of Strassburg, however, to take up the study of medicine and where he was able to devote himself to the lines of work in which he was most interested, his true abilities manifested themselves at once. After obtaining his degree in medicine at this university, he went for further study to the universities of Leipzig and Freiburg. Here he further specialized in the study of the application of chemical principles to animal pathology, along which line were made most of his contributions to science. When he had established himself in his specialties, he was made privatdocent and later professor at Berlin University, and finally was appointed to the enviable position of assistant in Koch's Institute. In 1896 he became director of the newly founded Institut für Serumforschung at Steglitz, which was later transferred under his direction to the Institut für experimentelle Therapie at Frankfort on the Main. Biographers usually divide his life into four periods according to the development of his work: 1, 1877-1890, devoted chiefly to the study of chemistry and experimentation with aniline dyes; 2, 1890-99, study of toxins, the chemistry of immunity, the development of the sidechain theory; 3, 1899-1906, study of hemolysins, malignant diseases in rats and mice, and completion of the sidechain theory by the theory of amboceptors; 4, 1906-1915, study of chemotherapy, especially in the treatment of trypanosomiasis. Ehrlich is best known as the discoverer of salvarsan, or 606. He was also the founder of hematology, and the pioneer of *Farbenanalyse* or the microchemical relation of the tissues to dyestuffs. An idea of the indefatigability of his brain may be gained by the fact that, between the years 1877 and 1914, he is said to have contributed 212 papers and books to the literature of science and to have inspired the composition of more than four hundred publications by his subordinates and laboratory workers. He was of course indirectly responsible for the printing of thousands of original articles by chemists, clinicians, and experimental pathologists the world over. He died on August 20, 1915, another of the great victims of the World War, the cruelties of which preyed on his mind and which he found hard to believe possible. He was the recipient of many scientific honors from all the countries of the world, among them the sharing in 1908 of the Nobel Prize in science with Metchnikoff. The Rockefeller Institute made grants for

some of his researches, and he delivered a series of the Herter Lectures in Baltimore.

This outline of Ehrlich's scientific career throws almost no light on the man's personal life; in fact, little was ever known about his private life except to a few of the most intimate of his colleagues. He married Hedwig Pinkus, daughter of Privy Commercial Councillor Pinkus, and the couple had two daughters, both of whom married German scientists. In 1888, he was threatened with phthisis and had to leave his work for a time to travel in Egypt in the effort to regain his health. Thanks to treatment with Koch's recently invented tuberculin, he recovered. His life was limited so entirely to his work and in this he was so untiring and indefatigable, with almost no relaxation, that, had it not been for the solicitous care of his devoted wife, he would doubtless have died much earlier than he did. As it was, his death from heart trouble came at the height of his scientific activities and, had he been spared some years, probably more great contributions would have been made by his genius to medical science. One of his biographers compares the brilliant, never resting mind of Ehrlich to "a sharp sword that ever tended to wear through the scabbard." He was always intensely preoccupied and absent-minded about everything in life except the immediate problem at hand. He had a tremendous power of concentration almost uncanny in its force and in its capacity to eliminate trifles, a quality which would have quite unfitted an average man for the ordinary affairs of life.

PROFESSOR EHRLICH IN HIS STUDY
(Courtesy of the *British Medical Journal*)

In a recent issue of *Medical Life,* A. L. Wolbarst writes interestingly about his personal reminiscences of Ehrlich. Wolbarst, accompanied by his wife, had gone in 1910 to the Institute of Experimental Therapy at Frankfort to study the then new remedy for syphilis, 606. He describes their arrival at the institute's waiting room, a large foyer bare of furniture and much in need of a coat of paint.

Through a letter of introduction, the Wolbarsts were admitted to the great man's inner sanctum, and the meeting is described as follows: "Seated in an old arm chair in front of a desk covered almost to the ceiling with papers, books, cigar boxes, stumps, matches, and various other articles, we saw a kind-faced, fatherly old man, probably sixty or more. He was reading my letter of introduction. Round about him were a few chairs and settees, all of which were similarly piled high with unopened mail, magazines, and books, all covered with a coating of dust that was glorious to behold. . . . As soon as he saw us he quickly arose, and asked us to be seated while he continued reading the letter. . . . At last he broke the spell by taking a cigar out of the box which lay near by and offering it to me. . . . It did not take long to plunge into conversation with this most charming man. He asked questions innumerable about New York and mutual friends in New York, and he recalled with pleasure his visit to our city some six years previously, referring particularly to the 'Flatironing' building where he bought 'those delightful cigars.'" An incident is recounted showing the great sensitiveness of Ehrlich to criticism. His secretary read to him one morning an attack on 606 by Gaucher. The great scientist was much distressed and wept. "All my life," he sobbed, "I have given to this work, and now they abuse me!" Wolbarst describes Ehrlich as a man fond of the country while on his brief and rare vacations, cordial and friendly with those he knew, of great simplicity and sweetness of nature, broad-minded and liberal in viewpoint, finding good in all and loath to find fault, with an appreciation of real values in life and people, and faultless as a host. "He always was eager to get the American viewpoint; he had a high regard for American physicians and American medicine generally."

Ehrlich's writings showed great felicity of expression. He had a genius for the creation of descriptive phrases such as his famous *"Corpora non agunt nisi fixata."* He was fond of expressing his ideas in symbols and diagrams. C. H. Browning writes of him in the *British Medical Journal:* "Were I to attempt to characterize the genius of Ehrlich, I should say that it consisted in two striking characteristics: his faculty of escaping the trammels of error in past work, and his capacity for bringing into association as the basis for experiments ideas which purely critical minds would tend to dismiss as fantastic." Browning goes on to say that he believes this man, whose practical contributions to medicine have been so numerous, probably never approached any problem in a utilitarian spirit. "Pure science," writes Browning, "frequently stand in need of apologists, and Ehrlich's whole career is a striking vindication of the pursuit of knowledge for its own sake. He who seeks, finds; and Ehrlich was an inspired seeker."

Editorial Articles

A NEW CATEGORY

Human characteristics have had various groupings. In medicine the study of man has long been pursued under the heads of anatomy and physiology. Pigeonholing by mental traits has seemed of less service, though the grouping into "sanguine, phlegmatic, bilious, and melancholic" was as distinctly psychological as it was physical, and it was only a generation ago that this grouping was revived by some psychologists and the physical features of each type pointed out.

Classification by constitution or diathesis, with reference to special diseases, has been attempted, though with much haziness of conception. Of late it has been little mentioned. In an attempt at a revival of interest in this subject and of putting the subject of constitution and disease on a more sharply defined basis of measurement, Draper, Dercum, and Seegal have been making some studies. The results of these efforts, so far published, are of considerable interest. They have at least added one more heading for human classification, or rather have separated one item into a more outstanding feature, that of reaction to bacterial infection. They group our traits into "four panels of personality"—morphology, physiology, psychology, and immunology.

Hitherto, reaction to bacteria has been considered as to some extent linked with anatomical structure—at any rate, tuberculosis has been so connected, and we have had the "phthisical constitution," "the phthisical chest," and other diagnostic phrases which have grown out of clinical comparisons. Perhaps it has not been taken into account, in this connection, that tuberculosis is not an acute disease and that the bodily type was as much the result of the disease as the disease the consequence of morphological type. At any rate, most of us have had the disease, diathesis or no diathesis.

The mechanism of resistance to infection is, of course, a physiological one, just as the reactions to environment which we call mental are also physiological. Both psychology and immunology rest on an anatomical basis, yet the brain, in structure and function is so little related (save perhaps in extreme cases) to other attributes that no comparison can be drawn. Spinoza, Descartes, Kant, Mill, all had marvelous brains, but they were as distinct in outward bodily traits as if they belonged to different varieties of the species. Chopin was of the tuberculous diathesis (if there is such a thing). Beethoven was of the apoplectic order. Balzac and Stevenson were at opposite anatomical poles.

Immunologically, there is as wide a variation in men. Washington and Lincoln were both athletes as well as statesmen of a high order; one had many attacks of malaria, dysentery, influenza, etc.; the other is said to have never been sick.

Anatomical and physiological traits are chiefly hereditary; so, too, are mental features, at least in general, but with apparently little reference, by descent, to the former factors. Immunological traits are also closely bound up with heredity and seem equally independent of measurable bodily features; however, we shall be glad if the investigators who have taken up this interesting subject will discover some definite anthropometric relationships which may be of help in clinical medicine.

THE TREATMENT OF GASTRIC AND DUODENAL HEMORRHAGE

Perhaps in no other condition has there been so wide a divergence of opinion regarding treatment as in severe gastric and duodenal bleeding. The physicians have held firmly to the view that medical measures are almost universally indicated and that to operate when severe hemorrhage was going on was directly contrary to sound practice. At a combined meeting of the Sections of Medicine, Surgery, Therapeutics, and Pharmacology of the Royal Society, held in London on March 5th last, a paper on this subject was read by H. J. Paterson and gave rise to considerable discussion. Although a surgeon, Paterson took the stand that surgical treatment of acute hematemesis was unjustifiable, but as his paper appears in this issue, it is superfluous to run through his arguments, which, stated briefly, are that in treating cases of hematemesis, inaction is often the wisest and possibly the only safe course, although always the most difficult.

In the discussion which followed, divergent opinions were expressed. Sir William Willcox drew attention to the risks attending the administration of morphine, pointing out that patients suffering from cirrhosis of the liver, alcoholic or syphilitic, were peculiarly susceptible to the toxic effects of the drug, and the same held good with chronic nephritis. He thought that the giving of morphine hypodermically as a routine practice in cases of gastric and duodenal hemorrhage should be discouraged. It was a good plan to promote the coagulation of the blood by giving calcium salts in the manner advocated by Vines and Grove. In long continued symp-

toms, he believed, as a rule, in operative measures. A. F. Hurst was strongly in favor of medical measures, stating that he had only once had occasion to call in a surgeon to save the life of a patient suffering from bleeding from a gastric or duodenal ulcer. R. P. Rowlands had faith in radical operative measures, while Izod Bennett thought that the immediate treatment of these cases should be left entirely to the physician.

In the discussion, the surgeons advocated operation, and the physicians for the most part, medical treatment. It was generally agreed that old sclerosed gastric ulcers with a history of chronic pain and thickened vessels should be treated surgically. Some of the surgeons thought that if operation were undertaken at all on a bleeding gastric ulcer, it must be a direct and drastic attack on the ulcer, its separation from pancreas or liver, and its destruction either by excision or cautery. It was pointed out that in hemorrhage from a duodenal ulcer there was a much greater tendency to early and repeated recurrence of the bleeding, and consequently it was more immediately serious than gastric ulcer.

The point held by Paterson was that operation should not be undertaken during acute hemorrhage, but that the interval between the hemorrhage and the operation should be at least three months. Statistics seem to be on his side.

The question of whether to operate during severe hemorrhage from gastric or duodenal ulcer is important, and it would be instructive to obtain the opinions of surgeons and physcians in this country on the subject. Sir Berkeley Moynihan is averse to medical treatment, and according to two articles on gastric and duodenal ulcer issued recently from his pen, the operative mortality is low. But there is much to be said for Paterson's contention that it is dangerous to operate when a gastric or duodenal ulcer is acutely bleeding. It may be pointed out that Paterson holds that in chronic or recurrent hematemesis operation should, as a rule, be deferred for two or three months after the last hemorrhage, according to the condition of the patient. It is well that this matter should be discussed from all angles, as it is only in this way that even an approach to an agreement can be arrived at.

It may be added that at a meeting of the Surgical Section of the Royal Academy of Medicine in Ireland, held on February 29th last, James Sherren, one of the best known surgeons of London, gave an address on disease of the stomach and its surgical treatment, in which he laid stress on the need for recognition and thorough medical treatment of acute ulcers, in order to prevent the chronic type. In acute cases, with hematemesis, he said an operation should never be performed.

THE USE OF ANIMALS IN TEACHING NUTRITION

Although it is a well known fact that, because animals and man are so different, laboratory results obtained through animals cannot always be taken as criteria for human conditions, yet it has also been proved that, given comparable conditions, valuable deductions can be drawn about man from animal experimentation. This applies especially to the subject of nutrition, a subject in which just now there seems to be a widespread popular interest. A number of scientific and welfare organizations and institutions, wishing to foster and contribute to this interest, have been teaching nutritional values to popular audiences and children through records of the comparative growth of animals on good and poor diets. This comparison, when the living material is not available, is made in charts and graphs, but of course the lesson is much more impressive if the actual experimental animals of the same litter, fed on different diets, can be shown.

This method is being used by the director of nutrition research at Battle Creek Sanitarium, Michigan. Health exhibits for the public are held in the laboratories at which the experimental animals themselves are sometimes to be seen, and always interesting charts and photographs of results. A little, stunted rat who has been fed on too much sugar instead of the proper protein diet, shown beside his big, healthy brother of the same age who has had the right kind of food, is a vivid lesson to the child who is greedy for sweets. An interesting series of experiments was recently started to show the deficiencies of some of the socalled average American dietaries. Five diets were planned. Diet 1 contained meat, starches, butter substitute and sugar. Diet 2 improved on this by substituting real butter, thus giving vitamine A, previously lacking. Diet 3 had whole wheat instead of white flour, adding vitamine B and some minerals. Number 4 contained less meat, green vegetables, and malt sugar instead of cane sugar. In diet 5 all meat was omitted and milk and eggs substituted. One rat in each of the two first groups died, showing rickets. Those in the other groups lived, showing significant differences in growth and development as the diets improved. The effect of iron as a blood building food was harder to demonstrate, since the animals apparently failed to respond with any anemic conditions. It was found, however, that mother rats fed on white bread or rice and milk for several months previous to birth of a litter, although they themselves did not seem to be anemic, failed to raise healthy young, and none of the third generation on the iron free diet survived. Since the value of fruits and fresh vegetables cannot be demonstrated with rats, who seem able to thrive without vitamine

C, guineapigs are used to show the results of this lack. Guineapigs fed on oats and boiled milk, lacking vitamine C, developed scurvy, while members of the same litter given greens were entirely free from this disease.

An article in *Public Health,* published by the Michigan Department of Health, states that any of these experiments could be carried out with comparatively little difficulty in the school room or small laboratory, and the living material in this way made available for demonstration, teaching and lecturing. If possible, several experiments should be kept going at the same time, so that some demonstration is always on hand. Small, compact cages have been devised for transporting the animals from place to place. Great care should be taken that no promiscuous feeding be allowed, and that a uniform method of feeding and of cleaning the cages be maintained. The interest in animals that most children have instinctively will make the exhibits appeal to them, so that they will readily catch the significance of the living object lessons.

AUTOMOBILE FATALITIES

In a report recently issued by the industrial life insurance companies of America, covering the years 1916-1920, the section on traumatism by automobile is of especial interest as emphasizing the fact that the control of automobile accidents is today the outstanding problem of the safety movement. The death rate from this cause rose continuously throughout the five year period, the figure for the final year (12.1 in 100,000) being almost fifty per cent. higher than that for the first year (8.1). "From the viewpoint of this rising tendency," says the report, "the automobile fatality record is in contrast to those for the four other principal modes of accidental death. In the case of accidental falls, for example . . . the rate declined almost continuously from 13.6 in 100,000 in 1916 to 9.5 in 1920, there being a drop of thirty per cent. Similarly, the accidental drowning death rate fell from 9.7 in 1916 to 6.7 in 1920, or thirty per cent.; and the mortality from accidental burns declined from 8.7 in 1916 to 7.8 in 1920, which is equivalent to a decrease of ten per cent."

Another point of interest is that automobile fatalities ranked second in numerical order among the accidental causes of death, its total being slightly exceeded by traumatism by falls. The automobile fatality rate was 10.5 in 100,000 as compared with 10.8 for accidental falls. In the later years of the five covered, however, deaths from automobile accidents considerably exceeded those from falls, meaning that, from 1918 to 1920, inclusive, automobile fatalities constituted the most important cause of death in the accident group. These figures supplement those issued by the census bureau relating to the general population. "Each set of figures tells the same story of the constantly increasing death toll. . . . This is obvious, even on the basis of the mortality figures, without taking into account the nonfatal injuries, of which unfortunately there is no really full and accurate record. It is known that during the two years subsequent to the period to which this report relates the automobile accident death rate continued to increase. There must be still closer cooperation between the police, the press, the school authorities, the automobiling licensing agencies, and, above all, between automobile owners and drivers and the general public."

Automobile accidents as a cause of death now outrank most of the infectious diseases. A few years ago automobile fatalities were by no means as numerous as deaths from typhoid fever, and were outranked also by the infectious diseases of children—measles, scarlet fever, whooping cough and diphtheria. According to this report, "Deaths due to motor driven vehicles exceeded by a very considerable margin the number due to typhoid fever or to measles; their total was about double the number due to scarlet fever and to whooping cough, and about half of that caused by diphtheria. It is, perhaps, even more striking to compare the automobile accident mortality with that due to some of the leading causes of death. There is, for example, one automobile fatality to every six deaths from apoplexy; one to every seven deaths from cancer, and one to every eight deaths from Bright's disease; there is one automobile fatality to every thirteen deaths from organic heart disease, one to every thirteen deaths from pneumonia, and one to every fifteen deaths from all forms of tuberculosis combined."

The report emphasizes the realization of the fact that the published death rates do not tell the full story as to number of persons killed, and that deaths as the result of collisions between automobiles and trains or trolley cars are not classified in mortality statistics as due to motor accidents, but under the headings railroad accidents or street car accidents. A special study was made by one insurance company as to the increase that would result from adding the number of deaths from such collisions to the total from automobile accidents, and found that, in a single year, in addition to 1,642 deaths officially classified, there were sixty-five additional fatalities from collisions of automobiles with trains and forty-two from collisions with trolley cars. When these 107 deaths were added to the total for the year, the

increase in the death rate from automobile accidents was six and a half per cent.

About one half of the deaths were those of children. More than a quarter were in the age group of five to nine years. Comparatively few of these children were passengers in the automobiles. The minimum rate was reached in the age group of twenty-five to thirty-four years.

"Comparison of the death rates of the several age groups . . . brings out clearly the following facts: first, the death rate among the insured at all ages exceeds that in the general population by a margin of seventeen per cent.; second, the mortality among the children of the wage earners exceeds that of children in the general population by very large margins, namely, forty-three per cent. at ages one to four; twenty-nine per cent. at ages five to nine, and thirty-nine and one-half per cent. in the age group ten to fourteen years; third, there is also shown a much higher death rate among insured adolescents; fourth, for some reason, which we are not able to explain, the automobile accident death rate during the main working ages of life, namely, between the ages of twenty-five and fifty-five years, is lower among insured wage earners than for the general population; fifth, in old age the figures are again unfavorable to the insured."

CANNED FOODS AND PUBLIC HEALTH

Foods preserved in sealed vessels represent a large and rapidly increasing proportion of our diet, according to Dr. W. G. Savage in his recent Milroy lectures on Canned Foods in Relation to Health. The art of canning arose in response to a bounty of twelve thousand francs offered by the French government during the Napoleonic wars for a method of preserving food that would reduce waste in naval and military stores. The success of canning in our Civil War gave a further stimulus to the new industry. Since then, in war and peace, preserved foods have been employed in increasing quantities. They have the advantage over fresh milk, meat, fish, fruit, and vegetables, of being easier to transport, store, and handle. By their use, seasons or places of plenty come to the aid of hard times or districts where natural production is impossible. The bulk and variety of food at the disposal of most of us are increased, and the cost of pleasant living is lowered. And yet there is a vague dislike of the idea. Are we justified in being content with this change in diet, or is our prejudice well founded?

Dr. Savage has set forth present knowledge—much of it the result of his personal labors—on the relation of preserved foodstuffs to health. His conclusions bring comfort on the whole, but he suggests several directions in which more research is essential, as some of the existing precautions are not directed against the most serious dangers.

Preserved foods, as prepared on a commercial scale, have some initial advantage over raw goods of the shops and markets. The materials are carefully selected and carefully cleaned—for the simple reason that they "can" better. The great firms select their oxen, use quite fresh salmon, store sardines in clean water for twenty-four hours, so that their alimentary tracts may be emptied, and can their fruits and vegetables before these have lost their natural freshness. Handling is replaced almost entirely by machinery, with great gain in bacteriological cleanliness. The inspection at source by Government officials, and still more the voluntary organization of the United States packers, and at the ports of entry in England, are far in advance of the casual handling, marketing, and retailing of most of the fresh foods that reach our tables. But there are still loopholes in the control of canned goods through which much damaged or dangerous foods may reach the consumer. Some of these, as Dr. Savage shows, can be remedied by legislation, and others require more research.

Summing up his own researches and those of others, Dr. Savage has come to the rather surprising conclusion that neither the initial selection of food, the kind of treatment it undergoes before canning, nor the final "processing" or subjection of the sealed cans to heat suffices to produce absolute sterility. There are bacteria or their spores, or both, in practically every sample of canned food. When these are of the kinds which cause fermentation or putrefaction, and when the subsequent conditions are suitable for their growth, the deterioration is usually plain to the sense of sight, by alterations in the aspect of the food or distortion of the can from liberated gas, or to the sense of smell. Existing safeguards secure the destruction of a large proportion of such spoiled foods. It is doubtful, moreover, if food merely fermented or putrefied does much harm, and certainly it is not responsible for the serious cases of poisoning.

Unfortunately, the real bacterial dangers, the microbes of the Salmonella group or those which produce botulism and the toxins which they liberate, cannot be detected by the senses of smell, taste, or sight, or by their mechanical effects on the cans. Moreover, it usually happens that they are present only in one or two out of a large consignment of cans, turned out at the same time, from the same factory, and subjected to the same subsequent conditions. Still further research is required at the source, that is to say, before the preparations are marketed, to discover the mode of entrance of the dangerous bacteria and the conditions under which they escape

the effects of cooking and manufacture. The Salmonella group appears to be associated more directly with certain definite localities, as, for example, according to Dr. Savage, with South America, and the native home of the rarer bacillus of botulism seems to be the prairies rather than cultivated ground. Taken in percentages, the risk from these dangerous groups is excessively small, and least of all in the case of the products of great factories, but it does exist, and can be overcome only by specific research.

There is little to justify the common fear of danger from metallic substances in canned goods, and so far there is no basis for the popular preference for goods preserved in glass. But there is a disadvantage in diets chiefly composed of preserved foods depending on their deficiency in vitamines. The accessory substances are unstable when subjected to heat and, further, if not destroyed by the actual process of manufacture, may be still further reduced by oxidation unless the materials are soon consumed. Fat soluble A, deficiency of which is associated with rickets, is most tolerant of heat, but gives way to subsequent oxidation, so that old cans of preserved milk may be quite deficient in this respect.

SPECIAL CANCER NUMBER

The increase of morbidity from cancer and the fact that its real nature is still one of the unsolved problems of medical science makes the special cancer number of the *Canadian Practitioner* a valuable contribution to the literature of the subject. The object of the symposium is to give a brief but comprehensive discussion of the present status of scientific knowledge about cancer, especially in regard to its cause, prevention and treatment. A number of authorities on the subject have contributed valuable articles, among which are the following: The Influence of Radiation Therapy on the Study of Cancer, by Dr. James Ewing; Clinical Observations in the Treatment of Cancer of the Uterus, by Dr. A. J. Ochsner; Treatment of Hodgkin's Disease by the X Ray and Radium Based Upon a Study of 200 Cases, by Dr. W. S. Stone; Chronic Intestinal Stasis and Cancer, by Sir W. Arbuthnot Lane, Bart.; Stasis the Main Cause of Cancer, by Dr. A. C. Jordan; Carcinoma, by Sir G. Lenthal Cheatle; Prevention of Cancer of the Stomach, by Dr. Nathan Mutch; Treatment of Intraoral Cancer, by Douglas Quick, M.B.; Treatment of Carcinoma of the Antrum, by F. M. Johnson, M.B.; Radiation in the Treatment of Mammary Carcinoma, by Dr. B. J. Lee; Radium Treatment of Carcinoma of the Bladder and Prostate, by Dr. B. S. Barringer; Cancer in the Female, by Harold Chapple, M.Ch.; The Cancer Problem; Researches on the Blood in Relation to Diagnosis and Treatment, by Dr. J. A. Shaw-Mackenzie; Treatment of Cancer of the Uterus with Radium and X Ray, by Dr. W. P. Healy; Radium Treatment of Skin Cancer, by F. C. Harrison, M.B.; X Ray Examination of the Upper Abdomen for Malignant Disease, by Dr. H. M. Tovell; and What Is to Be Expected of the Radium Treatment of Cancer of the Cervix, by Dr. P. Degrais and Dr. Anselme Bellot of Paris.

In an interesting editorial by Dr. Adam H. Wright, editor of the *Practitioner,* the "positive opinion" is expressed: that the causes of cancer are to a large extent known; it can be prevented in many cases; early diagnosis has become easier and more certain; most skin cancers are curable; and a large proportion of cancers once considered hopeless can be cured.

GRADUATE MEDICAL EDUCATION IN BROOKLYN

A public health movement in which the interest of the medical profession, not only locally but throughout the country, is enlisted is the Brooklyn extension plan for graduate medical education. Although this type of medical training had long been a dream of the physicians of Long Island, it remained for Dr. Frank D. Jennings, president of the Medical Society of the County of Kings in 1922, to make the plan practicable. That year marked the centennial of this society, and it seemed to Dr. Jennings that no celebration could be more appropriate than a demonstration of public service through education of the practising physician, so he appointed a committee to develop a plan. The adoption of this plan was voted by the society, with the result that the Brooklyn Home for Consumptives, the Kingston Avenue Hospital for Contagious Diseases, the Cumberland, the Greenpoint, the Jewish, the Long Island College Hospital, the Wyckoff and the United Israel-Zion all agreed to give graduate courses under the committee's guidance. There are no clinics in the usual sense, but the teaching is clinical in that the student sees the patient. Almost all these extension courses are given in the afternoon, and are designed to meet the needs both of those physicians who are able to give several hours a week to study, and of those who have not this time. A fee is charged for the intensive courses, but the others are open. The chief subjects included in the intensive courses are tuberculosis, syphilis, focal infections, fevers, diseases of the heart, kidneys and bloodvessels, diseases of the blood, spleen, pancreas and liver, diseases of the stomach and bowel, applied anatomy and clinical laboratory work. The extension courses cover diseases of the heart, spleen, pancreas, blood and lymph glands, arteriosclerosis, diseases of the lungs, thyroid gland, lower extremity and rectum, traumatic surgery, clinical pathology, empyema, the acute abdomen, prenatal care, pediatrica, contagious diseases of infancy and childhood, urology, and obstetrical and gynecological pathology.

News Items

Harvey Lecture.—Dr. Ludwig Aschoff, professor of pathology at the University of Freiburg, Breslau, Germany, delivered the eighth Harvey Society Lecture at the New York Academy of Medicine, Saturday Evening, May 17th. his subject being Renal Secretion and Renal Disease.

Testimonial Dinner.—Dr. Robert J. Carlisle, recently appointed professor of medicine at New York University, and member of the class of 1884, was honored at a testimonial dinner given on May 3d by the Alumni Association of the University and Bellevue Hospital Medical School.

Mental Hygiene Conference.—Several Buffalo medical and social organizations held a conference on different phases of mental hygiene on May 8th, 9th and 10th.

Industrial Hygiene.—An advisory committee has been formed to draw up plans for reorganizing the Division of Industrial Hygiene of the State Department of Labor; Dr. W. Gilman Thompson, of the Reconstruction Hospital, is chairman.

Merging of Relief Societies.—The Society for the Prevention and Relief of Tuberculosis, Inc., has been merged with the New York Association for Improving the Condition of the Poor. The combined activities call for an annual budget of $260,000.

Army Medical Corps.—The Surgeon General of the Army is soliciting applications from young doctors who have had at least one year's postgraduate experience, to adopt the army medical service as a career. Examinations will commence Monday, July 28th.

National Hospital Day.—May 12th, the anniversary of the birth of Florence Nightingale, was again observed as National Hospital Day. Appropriate exercises were held at the different government hospitals, and at many other public and private hospitals.

Annual Conference of Health Officers.—The annual conference of health officers and public health nurses will be held at Saratoga Springs, N. Y., probably on June 24th, 25th and 26th. It has been suggested that the program include a special session for city health officers, under the joint auspices of the State Department of Health and the State Conference of Mayors.

Personal.—Dr. Appleton H. Pierce, Senior Surgeon, U. S. Public Health Service, Reserve, has been appointed Medical Officer in charge of the recently completed U. S. Veterans' Hospital No. 95, at Northampton, Massachusetts.

Dr. Eugene Lyman Fisk, medical director of the Life Extension Institute has sailed for th epurpose of arousing interest in the introduction of periodical health examinations.

Medical Attention to School Children.—Dr. L. W. Childs, supervisor of health education of school children in Cleveland reports that nine Cleveland hospitals have agreed to give aid to children injured in or about the schools, in case accidents happen when no school physician or nurse is present. Private practitioners cannot be called for these cases, as the school board has no authority to pay for such treatment in case the child's parents cannot pay.

Rush Medical College.—Plans have been completed for the merging of Rush Medical College and the University of Chicago. For the time being, Rush College will continue its present work. New buildings on the Midway will house the School of Medicine of the University, which on completion will absorb the work of Rush College. The new Rawson laboratories will house the postgraduate department. The units to be erected at once include the Billings Memorial Hospital, containing two hundred beds. Affiliated institutions are the Presbyterian Hospital, John McCormick Memorial Institute for Infectious Diseases, and the Home for Destitute Crippled Children. Teaching facilities are afforded by Cook County Hospital. Rush Medical College was founded about seventy-five years ago.

Activities of New York Academy of Medicine.—Of outstanding interest is the purchase by the academy of a site at Fifth Avenue and 103d Street, on which it is planned to erect buildings at a cost of $1,700,000. The property on Park Avenue has been sold.

A portrait and a marble bust of the late Dr. Arpad G. Gerster has been presented to the academy, also a portrait of Dr. Walter B. James.

A special committee of the academy has undertaken the coordination of all facilities for postgraduate medical instruction in greater New York.

Hospital Notes.—Hunts Point Hospital, in the Bronx, will be opened to the public May 11th. The superintendent will be Dr. S. B. Hirschberg, and the chief resident physician, Dr. David Miller.

The New Rochelle Hospital has increased its capacity from ninety to one hundred and fifty beds.

The Bronx Eye and Ear Infirmary, now situated on East 12d Street, has purchased ground on the Grand Concourse 166th Street, on which it will build a four story building.

The cornerstone of Hudson Towers, the hospital hotel, has been laid.

Dr. A. J. Bedell Honored.—Dr. Arthur J. Bedell of Albany has been elected chairman of the Executive Committee at the meeting of the ninety-first annual clinical congress of the New York Section of the American College of Surgeons.

To Study Industrial Diseases Abroad.—Dr. George M. Price, director of the Union Health Centre and the Joint Board of Sanitary Control, sailed for Europe on May 15th. He has been commissioned by the New York State Industrial Commissioner to study industrial diseases and their compensation.

United Hospital Fund.—The yearly distribution of the United Hospital fund has just been made, fifty-six hospitals receiving $525,000, the amount collected last year. Of this, forty-seven Manhattan hospitals received $442,000, and nine Brooklyn hospitals $82,000. In addition, over $18,000 was given to certain hospitals specified by the donors. The distribution was made on the basis of days of free treatment given by the institution, the cost of caring for ward patients, and the character of the hospital management. No distinction is made as to race or creed. Of the general hospitals, Mount Sinai received the largest amount, $41,800, but the largest single allotment went to Montefiore Hospital for Chronic Diseases, $52,500.

Smallpox.—Outbreaks of smallpox have been occurring at widely separated places. Probably the largest number have been found in Detroit, where there have been 697 cases during the first three months of 1924, and general vaccinations have been made. Forty cases of smallpox have been tabulated at New Britian, Connecticut, since the first of the year, with five deaths. Schools have been closed in Southfield, New York (a rural community near Ithaca) and in Huntington, a small town near Westfield, Massachusetts. A case of smallpox thought to have been contracted on board a ship from Bombay to Marseilles caused the death of a passenger on the *President Roosevelt*, sailing from Southampton to this country. Ninety of the first class passengers were vaccinated, and medical officers at quarantine made a close examination of all on board the ship.

League of Nations' Medical Work.—The League of Nations is working toward building up a system of international exchange of reports and epidemic diseases and statistics of their prevalence and mortality, which is felt to be especially important with regard to the countries of Asia and Eastern Europe, the locality of such severe epidemics. These studies will be handled as the Epidemicological Intelligence and Statistics Section of the League of Nations, and Dr. Otto R. Eichel of Albany, New York, has been given leave of absence from the New York State Department of Health, to direct the work. Dr. Eichel has attained unusual distinction in the scientific world for a young man, being one of the few Americans elected to Fellowship in the Royal Statistical Society of England. He has been engaged in public health work for fourteen years, and attained recognition for study of influence cycles.

Association Meetings.—The American Medical Association will hold its annual meeting in Chicago, from June 9th to 13th. Although opportunity will be given to visit the completed headquarters of the association, at 535 North Dearborn Street, said to be the largest and most completely equipped building devoted to the activities of a professional organization, the meeting itself and the exhibits will be held at the Municipal Pier.

The eighth annual meeting of the Association for the Study of Internal Secretions will be held at the Drake Hotel, Chicago, June 9th. Dr. Walter Timme, of New York, is president; Dr. T. E. Smith, first vice-president; Dr. A. T. Rasmussen, second-vice president, and Dr. F. M. Pottenger, secretary-treasurer.

The second annual meeting of the American Association for the Study of Allergy will be held at the Drake Hotel, Chicago, Monday, June 9th, under the presidency of Dr. Grant Selfridge, of San Francisco.

Other associations meeting in Chicago at practically the same time are: Medical Women's National Association, Radiological Society of North America, American Radium Society, American Society of Tropical Medicine, Associated Anesthetists of the United States and Canada, and the Medical Library Association.

MEDICAL IMPRESSIONS OF MEXICO CITY

William Sharpe, M.D.
New York

During the latter part of the summer of 1923 I had the honor of being invited by the Medical School of the University of Mexico to give a series of lectures and operative clinics in that distinguished medical centre, upon the subject of neurological surgery, and it is with much pleasure that I gratefully acknowledge the many courtesies shown to me by the members of the medical profession of Mexico City. It was my fear, at first, that on account of the heat the summer would not be an advisable season of the year for such a visit, but I was reassured that the climate was then most enjoyable and moderate and that, in fact, the months of June, July, August and September were the most pleasant ones of the entire year there. And now, after my visit, I do not hesitate to state that there is no city quite so delightfully cool during our summer time, with a climate fresh and invigorating—both as a beautiful city and as a summer resort, with its environs unequalled, an atmosphere of historic and educational interest, the charms of old Spanish architecture and historical associations—I know of no place upon the Western Continent that can compare with the capital of Mexico. The hotels are excellent in service and food, and the city is clean so that the most exacting visitor need have no fears. English is understood throughout the city and yet a speaking knowledge of the Spanish language is both interesting and helpful.

Situated in the Valley of Mexico upon a plateau having an altitude of over seven thousand feet and a diameter of almost seventy miles, surrounded on all sides by mountain ranges some of which are perennially snowcapped, a luxuriant tropical vegetation, extensive drives and promenades—to mention merely the Alameda, Avenida de la Reforma and Chapultepec Park with its beautiful lakes and trees, Mexico City has a unique charm for traveler and student alike. Some of these trees were there during the invasion of Cortez, four hundred years ago, and are now over forty feet in circumference and over two hundred feet in height. Other interesting features are the historic structures of the Plaza de la Constitucion, such as the Cathedral (almost four hundred years old and built upon the ruins of the old Aztec temple), the Palace of Cortez, the National Picture Gallery (the oldest upon the American Continent), the National Museum with its priceless treasures—the old Aztec Calendar Stone (approximately one thousand years old) and the Aztec Sacrificial Stone, upon which twenty thousand human beings were sacrificed yearly at the time of the Spanish invasion under Cortez, and numerous churches erected during the régime of Cortez and the later Spanish viceroys.

The National School of Medicine, as a department of the University of Mexico, is under the able directorship of M. Gia Gonzales, and is situated in the historic building of the Holy Office of the Inquisition, having been erected in 1732 upon the site of the first Dominican Convent built upon this continent; many of the smaller rooms were formerly used as cells for the victims of the Inquisition—the last one being the revolutionary patriot and national hero, Morelos, who was shot in 1815. The outer and inner walls are of solid masonry and over one yard in thickness, having a most unusual patio architecturally, in that the corner pillars or supports of the upper cloister are missing. The medical school is in a very flourishing condition, the number of students being even larger than before the World War, and the course is a most thorough one of six years—hospital internship and a doctor's thesis being obligatory requisites for a degree.

In a country having a culture so much older than our own in the United States, in fact, we need only to remember that at the time of the Jamestown colony in 1607 and of the Landing of the Pilgrims in 1620, the Spanish invasion of Mexico had occurred one hundred years before, and especially in this Valley of Mexico the culture and religion of Spain had become firmly superimposed upon the advanced civilization of the Aztecs, it is not surprising to find in Mexico City the oldest hospital upon the Western Continent—Hospital de Jesus Nazareno, erected in 1527 upon the site of the meeting place of Cortez and Montezuma in 1519. It is a long, low building of masonry with the ever present patio of much charm; the tropical vegetation of Mexico makes it possible to transform the commonest garden into a place of beauty with its palms and flowers the year around.

The most interesting hospital, however, from a medical point of view, is the Hospital General, covering many acres of beautiful grounds and each of its forty wards in a separate one story building and accommodating in all almost two thousand patients. The excellent window ventilation and sunlight facilities in the open patios and upon the roofed porches and promenades, the spotless cleanliness of the wards and of the patients themselves—these were most impressive and indicated an advanced degree of nursing and the proper attitude toward charity patients in hospitals; the director has reason to be proud of this institution.

The operating rooms are satisfactorily lighted and sufficiently equipped for excellent surgical work; in this regard, it is observed here as in South America, that there is an absence of surgical nurses in our meaning of the term—nurses who scrub for operations, have charge of the instruments, suture material, etc., and frequently assist in the operation itself by holding retractors, etc., and thus valuable aids if the surgical technic is to be both rapid and smooth. This development of the nursing problem in Mexico will undoubtedly come within a few years.

The x ray laboratory and equipment are most complete—the best modern apparatus having just been presented to the hospital by President Obregon. There is an elaborate Zander exercise room and also a spacious swimming pool with numerous therapeutic baths. In addition to the wards for infectious diseases, there are separate ones for typhus and also for leprosy, this latter disease being unusually common in Mexico, due to a large extent to the lack of governmental interest and control, in that patients in both the early and advanced stages of this horrible and loathsome disease are not segregated or even

mildly restricted in their daily activities, so that they may be seen not only upon the streets but in the churches and theatres, and thus greatly increasing the danger of infection. Fortunately, at present, there is an agitation in the medical profession to stimulate the Government in its duty, not only in regard to the victims themselves but also to the public and the possible future victims. On the other hand, a laudable advance has been made by the medical profession of Mexico City in regard to autopsies which are permitted upon all bodies not claimed within twenty-four hours after death in hospitals; in this manner the diagnosis may be confirmed, the real (and not merely the supposed) cause of death is ascertained, and thus the doctor acquires the proper attitude toward his work—not knowing everything, but very willing and anxious to know when a mistake is made so that future patients may benefit from this added knowledge.

The Military Hospital is another well organized institution. Until the revolution separated the Government from the Church, the two story buildings had been constructed and were being used as a convent, and throughout them may still be seen the cells into which those nuns, sinful in thought and in deed, were thrust and confined to do penance. The wards are well ventilated and clean. Outdoor sports of all kinds are now being stimulated in the army and among the youth of Mexico, so that it was not surprising to see an exciting baseball game in progress in one of the large hospital enclosures and also several soldiers receiving boxing lessons in the gymnasium—formerly the chapel!

Among the several other large hospitals of a similarly high character, such as Hospital Juarez, Hospital Beistegui, etc., there is the same constructive effort of directors, doctors and nurses to afford their patients the best possible service and it is very gratifying to record this ideal attitude. One of the most picturesque of the smaller hospitals is the American Hospital with its beautiful garden of entrance and its extensive walks among the numerous trees and tropical vegetation on all sides. Excellent work is being carried on here under Dr. Monroe, Dr. Pressley, Dr. Goodman and others, and an effort is now being made to erect a modern hospital building similar to the one now being constructed for the British Colony by a recent bequest of approximately one million dollars.

It was very impressive to observe the excellent operative technic at the different hospitals and particularly of the junior group of surgeons of forty years of age and even younger, among whom are Dr. Ortiz, Dr. Miranda, Dr. Mendizabal, Dr. Palacio Luis, Dr. Bremont, Dr. Rodillo, Dr. Ryydes, Dr. Margain, Dr. Varelas, Dr. Valverde, Dr. Meloz and others. Skilled in the most modern methods, even though their technic is handicapped by the absence of trained surgical nurses, these men are obtaining satisfactory results. Up to the present, no general surgeon has specialized or limited his work to any particular field of surgery, but apparently the time has now come in Mexico City for this further development in surgery, thus enabling the surgeon not only to extend his knowledge more and more regarding a special field, but also to perfect his operative skill and thus obtain even better results. So much more common in Mexico City than in the United States is the use of local anesthesia for appropriate conditions affecting all parts of the body and of spinal anesthesia for lower abdominal and pelvic lesions that each surgeon, thus influenced by the French school of surgery, has become an expert in its safe administration.

The medical profession, not only of Mexico City but throughout the Republic, has become more and more impressed with the need and the value of closer cooperation and thus produce an organization better adapted to the needs of the various communities and of the profession itself. Organized along lines similar to the American Medical Association, the Mexican Medical Association was formed within the past two years, having already enrolled over five hundred members. This organization will be of great benefit to the people of Mexico in that various medical suggestions regarding sanitary needs can thus be made to the Government and as the association becomes larger and more powerful, it can make a combined attack against existing unsanitary conditions and medical abuses throughout the country; in addition, medical knowledge and research work will be both stimulating and facilitated by the annual meetings.

In closing, let me repeat that I know of no more attractive and interesting city and environs to be visited by the medical profession and their families, and one more preferable as a summer resort, than the capital of Mexico. The sanitary conditions there are excellent and there need be no fear of lawless attacks—less so than in New York City. English is understood generally throughout the city, but a smattering of Spanish would be both useful and a pleasure to the visitor.

20 West Fiftieth Street.

LONDON LETTER

(From our own correspondent)

London, *April 19, 1924.*

THE ELIZABETH GARRETT ANDERSON HOSPITAL

Lord Riddell, presiding on March 11th at the annual meeting of the Elizabeth Garrett Anderson Hospital for Women in London, said that the freehold of the site on which the hospital stands had been bought as the result of the bequest to English charity of a sum of money by Mrs. Gertrude Lorillard, of New York. The number of in-patients during the past year had been 1,387 and the number of out-patients 9,964 with a total of 51,770 attendances. It was those branches of medicine that specially concerned women that had been the particular interest of medical women, and as women formed more than half the population of Great Britain this seemed only right. Mrs. Fawcett, speaking of her sister, after whom the hospital was named, said that a great deal of Elizabeth Garrett Anderson's spirit seemed to have fallen on the managing committee, which was composed equally of men and women. This equality of the sexes on the committee seemed to her so sensible and natural that she wondered why other hospitals did not adopt it. Mr. Gordon Pollock said that it was proposed to increase the in-patient accommodations, there is a waiting list of two hundred, so

as to provide for larger medical and surgical wards, a small children's ward, and adequate maternity and isolation wards. There would also be a new outpatient's department in two sections and an outpatient's theatre. It was estimated that £50,000 would be required to carry out these improvements.

FEWER DOCTORS

According to the medical correspondent of the London *Times,* a very remarkable slump has taken place in the number of entrants to the medical profession in Great Britain. In 1919 nearly 3,500 medical students were enrolled. In 1923 the number was 545. This is the lowest number for more than twenty years. The *Lancet* expresses the view that the drop is partly to be accounted for by a reduction in the number of women students. "Judging by the Christian names in the General Medical Council's list of students there are hardly more than sixty women among the total of 545 medical entrants in 1923."

ACCIDENT TO SIR ST. CLAIR THOMSON

Sir St. Clair Thomson, the well known nose and throat specialist of London, who attended the late President Roosevelt, the late King Edward and the King of the Belgians among others, was injured in the accident to the Ventimiglia express near Lyons on March 10th. It has been announced to the great relief of his many friends that his injuries are slight and that he will soon be able to resume his journey to the Riviera.

THE CANCER CAMPAIGN

The meeting of the Grand Council of the British Empire Cancer Campaign, which was held on March 7th last, was the first meeting under the amended constitution, which has been carried out in agreement with the Imperial Cancer Research Fund, the Cancer Hospital, London, the Cancer Charity of the Middlesex Hospital, and other associated bodies. Mr. S. G. Asher, chairman of the Medical School and of the Cancer and General Research Committee of the Middlesex Hospital, has become a member of the scientific advisory committee, and will serve as one of the two lay members. The committee is now complete, and consists of the following: Sir John Bland-Sutton, Dr. H. H. Dale, Sir Richard Garton, Dr. F. Gowland Hopkins, Sir William Dunn, Dr. Robert Knox, Sir William Leishman, Professor C. J. Martin, Dr. Robert Muir, Sir Humphry Rolleston, and Mr. S. G. Asher. A large number of suggested cures, treatments, and offers of services have been dealt with by a preliminary inquiry committee, under the chairmanship of Sir Charles Gordon Watson, and a certain number of these suggestions are being passed forward to the scientific advisory committee for consideration.

RESIGNATION OF DR. MARGARET BALFOUR

According to the Indian papers Dr. Margaret Balfour, head of the Women's Medical Service in India, a post she has held since 1917, has resigned, and is now on her way home. In all Dr. Balfour has given over thirty years of her life to India. In 1892 she began three years at the Women's Hospital at Ludhiana. From this place she went to Nahan to take charge of the Women's Hospital there. Her next move was to the Lady Dufferin Hospital at Patiala in 1902. In 1914 she became assistant to the Inspector General of Civil Hospitals, Punjab, which post she held until she took up the one she has just resigned. Dr. Balfour while at Delhi and Simla has been an ardent worker for various welfare schemes initiated for bettering the condition of Indian women and children. Her departure will be a great loss to India, but she is succeeded by another able practitioner, Dr. Agnes Scott, who has had over twenty years' medical experience in India.

ROYAL SOCIETY AND THE LEAGUE OF NATIONS

A special meeting of Fellows of the Royal Society of Medicine was held at the House of the Society on April 10th, to receive the medical officers of health who were visiting Great Britain at the request of the League of Nations. Some fifty medical officers of health attended, and Dr. Rajchman, Medical Director of the League of Nations Secretariat, delivered a short account of the work of the League of Nations Health Organization.

SPAHLINGER TREATMENT

In the House of Commons the other day the Minister of Health, Mr. Wheatley, in a written answer to a question said that he was anxious to arrange for a scientific investigation of the Spahlinger method of treatment in Great Britain, and had personally given Mr. Spahlinger assurances to that effect.

IMMUNIZING CHILDREN AGAINST DIPHTHERIA

The question was asked the Minister of Health in the House of Commons on March 4th whether his attention had been drawn to the remarkable results obtained by the Department of Health in New York in immunizing children against diphtheria; and whether he proposed to take steps to enable parents who desire it to obtain the advantages of this treatment for their children free of charge. The Minister of Health replied: "The answer to the first part of the question is in the affirmative. This form of preventive treatment was the subject of a special medical report by the Ministry of Health in 1921, and in July, 1922, a memorandum was issued to local authorities drawing attention to the practical advantages of the method. The question of offering the treatment to parents is for the decision of local authorities or the managing bodies of institutions, but the Ministry of Health has offered expert advice and assistance in the application of the treatment by those who desire to adopt it."

OXFORD OPHTHALMOLOGICAL CONGRESS

This congress will assemble at Reble College, Oxford, on the evening of July 2d, and the meeting will be held on the following three days. On the first morning a discussion will be held on the general principles of the treatment of convergent concomitant strabismus, with exclusion of description of details of operations to be opened by Dr. E. Landolt of Paris and Dr. Ernest Thomson of Glasgow. The Doyne Memorial Lecture will be delivered on the morning of July 4th, by Dr. T. Harrison Butler, the subject being Microscopy of the Living Eye. The official dinner of the congress will take place on the evening of July 3d.

PARIS LETTER

(From our own correspondent)

PARIS, *April 12, 1924.*

BLOOD MARRIAGE

For many decades now, Paris has attracted physicians and surgeons from Eastern Europe, for the purpose either of research or of practice. Curiously enough, not a few of them have devoted their attention to the problem of rejuvenation or, at least, of the prolongation of human life. The late Professor Metchnikoff had his hour of celebrity in this connection. As he was for many years in the research department of the Pasteur Institute, it was natural enough that his theory should have been essentially microbian. It will be remembered that he pinned his faith to lactic ferments and the suppression of raw foods. As he was little more than sixty when he died, in spite of pasteurizing his salads and ingurgitating untold quantities of curdled milk, wouldbe centenarians have deserted his doctrine. The fame of Dr. Sergius Voronoff then spread over the land. Now that the chief exponent of the glandular process is absent in Africa, rounding up chimpanzees, it is said, Dr. H. Jaworski has stepped to the front. He is the proponent of rejuvenation by the transfusion of blood, and he terms his system the "marriage of blood."

Dr. Jaworski explains that he takes small quantities of blood from a number of subjects, all young and healthy, and analyzes the samples until he finds as complete analogy as possible to the blood of the patient whom he wishes to treat. The exact sample having been found, he proceeds to transfuse a small quantity of the blood. A few drops will suffice, he asserts, because the basis of the process is qualitative and not quantitative. By this system he maintains that he has reduced arterial tension in men and women of sixty years and, in general, to have eliminated symptoms of senility. Dr. Jaworski sums up his method by declaring that such transfusion brings about "a biological rejuvenation of the organism." It should be stated, however, that his communication was made before the Paris Society of Practitioners, which is not one of the leading learned societies of France and that, apparently, he has not been averse to preliminary booming in the newspapers.

CURES DRUNKENNESS, TOO

Simultaneously comes the news from Tours, the city in the heart of the Château Country of the Loire Valley so well known to American tourists, that a local practitioner has met with much success in curing alcoholism by subcutaneous injections of the drunkard's own blood. His name is Lhospitalier and he lives at La Membrolle, in the suburbs of Tours. Dr. Lhospitalier, who has communicated to a medical journal the results of his experiments, does not seek notoriety and asks other doctors for corroboration. None the less he has applied autohemotherapy to sixteen alcoholic subjects, all of whom are now cured. He admits frankly that he stumbled upon this "booze cure" by accident. In 1919 the relatives of a prosperous farmer appealed to him to do something to kill the drink habit in him. Dr. Lhospitalier had been studying autohemotherapy from the theoretical point of view and the thought came to him that the blood of a drunkard might furnish an antidote. Taking a small quantity of the farmer's blood, he used it immediately for a subcutaneous injection. The next day the man ceased drinking; alcohol produced nausea. The effects, however, did not last longer than ten days. Consequently, the injections had to be repeated periodically, but in the intervals the patient was amenable to moral suasion and there was a complete cure. The same success was achieved in fifteen other instances. In the meantime Dr. Lhospitalier perfected his method. Instead of repeatedly taking quantities of blood, which process tends to weary the patient, he resorts to autoserotherapy, taking sixty cubic centimetres of blood and sending it to a laboratory for preparation. Then he injects half a cubic centimetre of the serum, two days later one cubic centimetre, two days later one and a half cubic centimetres, and, at intervals of two days, two cubic centimetres each time until eight injections have been made. Dr. Lhospitalier asserts that red noses become normal and also that there cannot be any question of autosuggestion in his process seeing that in several instances the patient was left in absolute ignorance of the nature and purpose of the operation.

PROGRESS OF TEMPERANCE

If one could believe statistics recently issued by the Ministry of Labor the time is within sight when Dr. Lhospitalier will find his occupation gone. This Ministry conducted an inquiry among big industrial concerns with the object of ascertaining the part which alcohol plays in the daily life of the French workman. The results are considered by the Minister to be highly satisfactory. Undoubtedly the development of athletics in this country has induced the younger generation to forsake the cafés, while the increased duty on alcoholic beverages has reduced the amount consumed by the elders, but the fact remains that the official statistics in question are not conclusive because the questionnaire was not exhaustive. Consequently Professor Letulle, of the Academy of Medicine, who actively presides over the National League Against Alcoholism, has set about to control the figures obtained by the Ministry of Labor. He is convinced that temperance has made progress but he does not wish to be too optimistic.

OYSTERS AND TYPHOID

One of the causes of alcoholism has been the rapid growth in recent years of the *vin blanc* habit. White wine is generally of greater alcoholic content than the old fashioned red wine with which the doughboy of the A. E. F. soon struck acquaintance and which played no small part in the daily ration of the poilu. Many men now take white wine in the morning instead of coffee and they have a tendency to repeat the dose throughout the day. White wine is also favored with oysters, which are very plentiful and popular in this country. Now three well known doctors have risen up against the oyster. Dr. Courtois-Suffit, Dr. Francis Bourgeois and Dr. Raymond Garcin, in a paper read before the Academy of Medicine, have given the results of observations made in 328 cases of typhoid fever. In their view, water nowadays plays a minor part in typhoid contagion. They hold that milk and especially oysters are more often responsible. The indictment against the oyster

is such that the three doctors agree in recognizing an "ostreaceous" form of the malady. The evolution is more serious and the mortality greater (seventeen per cent. against 3.6 per cent. when the contagion is due to other agents). Incidentally, it is learned that vaccination against typhoid is not proving popular, particularly in rural districts, in spite of propaganda in its favor by the Ministry of Health. Because of their 328 patients 224 were women, the aforesaid doctors argue that women do not favor antityphoidic vaccination. They seem to forget that during the war such vaccination was compulsory in the army and that the male population was mobilized between the ages of nineteen and forty-eight.

WASHINGTON LETTER

(From our own correspondent)

WASHINGTON, *April 15, 1924.*

THE RULING POWERS IN WASHINGTON

It is interesting to speculate as to just who is the Government of the United States, just who it is that really makes the wheels go round, and whose is the hand upon the rudder of the ship of state. Theoretically, the President as the head of the Executive Branch of the Government exercises this function, but manifestly he cannot know, much less direct, the multitudinous activities which are supposed to include service to 125,000,000 people. He can, it is true, outline to the members of his cabinet a general policy which he wishes pursued, much in the same manner that a millionaire yacht owner comes aboard and says, "All right, skipper, let's go to Europe." Between the outlining and the execution, however, are many steps about which he never can know, and about which he therefore can do nothing. Then, too, Congress has a habit of inserting little phrases like, "Provided, that no portion of the monies herein appropriated may be expended for ———." This is calculated to cramp the executive style, but it is as nothing to what the Director of the Budget can and does do when he feels that way—which many believe is generally. Also there's the Supreme Court. Congress proposes, but it's the Supreme Court which disposes. It used to be said that that august body was the Government of the United States, but now there are many hard pressed bureau chiefs who are muttering to themselves that the budget is the supergovernment. "Wrong!" screams the patriot. "The people guide the nation—especially election years." The people run our government exactly as does the man whose wife takes him to help her choose a hat —they pay the bills.

Who then keeps the wheels of the government oiled and in motion, who really administers our federal affairs? It's the clerks. Little musty old men, whom Dickens would have loved, wizened maiden ladies, capable encyclopedic secretaries, even the old messengers whose suavity and dignity might be a pattern for a royal court—they run the Government as inflexibly as any benevolent despotism. Cabinets may come and go, the Senate may investigate, comtrollers may make weighty decisions, reformers may breeze in from the hinterland and slink out unnoticed, but the clerks go right along as unchanging and unchangeable as the Sphinx. A new bureau chief takes his seat, filled with the holy zeal of reform and efficiency. He issues an order. His chief clerk invariably digs up an old law, executive order or comptroller's decision, which makes the contemplated action impossible. In one form or another this is repeated every time the chief tries to do something new, always kindly, even tolerantly, much as one gently thwarts a headstrong child. Struggle though he will, the chief must follow the routine established by law and precedent, and once he has learned just what to do with the dotted line he is allowed to exercise the semblance of power. This is the reason why so many strong men come into Washington full of hope, and leave it embittered by failure to achieve their ideals. It is particularly galling to professional men and scientists to be obliged to thrash over highly technical matters with Departmental Committees, Budget Committees and Appropriation Committees, and in the end find themselves hampered by the red tape on which the clerkly class feeds. So far as the medical departments are concerned, they are as much hampered as anybody else, but they manage to carry on and to do some really good work in spite of the limitations by which they are surrounded.

But government of, by and for the clerks, is not an unmixed evil. They are the stabilizers of our ship of state, and when the proletariat becomes hysterical and politicians try to rock the boat, they are the ones who keep it on an even keel. They are repositories of great stores of information, ambulatory files in which precedents are recorded. No more honest, faithful, loyal body exists in our country, and they are the force without which our government would soon cease to function and would quickly join the vanished pomps of long forgotten civilizations.

CANCER DRIVE CONCLUDED

The intensive drive against cancer conducted by the District of Columbia Committee of the American Society for Control of Cancer came to a close on April 12th, with a noon meeting in the National Theatre, and an evening lecture by Dr. James A. Cahill, Jr., which was broadcast over the radio. The noon meeting was addressed by the president of Georgetown University, Rev. Dr. John B. Creeden, the Hon. W. T. Page, and Dr. William Earl Clark. Cancer Month which began March 15th ended formally on April 15th with a public meeting at the Women's Club which was addressed by Dr. E. A. Merritt, director of the x ray laboratory at Garfield Hospital. The success of the drive has far exceeded the expectations of its proponents, and the special clinic which has been a part of the movement is now being patronized at the rate of more than two hundred patients a week. It is the belief of those who are most interested in the work that the large number of addresses which were made by the medical men of the District of Columbia and other prominent citizens will accomplish a great deal in the matter of public education, and will bring to the surgical services of the local hospital an increasingly greater number of early breast cases.

PHYSICIANS' BANQUET

The Washington Medical and Surgical Society will hold its twenty-seventh annual banquet at the Wardman Park Hotel on April 23rd. Dr. Alfred

Stengel, of Philadelphia, will be the guest of honor. Following his paper on Some General Considerations on Cardiovascular Disease which he will read at the banquet, Dr. Stengel will be made an honorary member of the society. The officers of the society are Dr. Ralph M. LeComte, president; Dr. A. C. Gray, vice-president; Dr. Albert P. Tibbets, secretary; and Dr. Frank E. Gibson, treasurer. Besides a large number of local guests, a number of distinguished medical men from nearby cities will attend the banquet which has been arranged by a committee consisting of Dr. Frank E. Gibson, Dr. Howard F. Kane and Dr. William J. Mallory.

MERCUROCHROME

The Division of Chemistry of Medical Products of the American Chemical Society has announced that mercurochrome—220 has been found valuable, not only in the treatment of ordinary infections, but has recently produced remarkable results by being injected in apparently hopeless cases of septicemia or blood poisoning. In a number of these cases the cure was exceedingly rapid. Another related compound of mercury, called flumerin, has shown promise in the treatment of syphilis." Dr. A. C. White, of Baltimore, is credited with a considerable part in this discovery.

LATIN AMERICA LETTER

(*From our own correspondent*)

BALBOA HEIGHTS, *February 15, 1924.*

MORE TREASURE HUNTERS

The average adult believes in fairies. While it would be difficult to secure from him an admission of the fact, he is sure in his heart of hearts that there is a pot of gold at the end of the rainbow. Almost every year there passes through the Panama Canal an expedition of treasure diggers led by some wily individual who is willing to profit by this frailty of humankind and usually the destination is Cocos Island which is about one hundred and twenty-five miles northwest of Puntas Arenas, Costa Rica. The exact amount of gold which is to be dug up depends upon the gullibility of the party, but always there is a time stained map which has been confided to somebody by an ancient mariner upon his death bed. Judging by the number of these maps which have appeared on the Isthmus in recent years there must be a well organized factory for their fabrication. With certain minor details, the story is always the same. About a hundred years ago, the mutinous crew of the British ship *Mary Read* buried a treasure, which had been placed on board for safe keeping during the war between Chile and Peru, on the Island of Cocos. Later the absconding crew was captured by a Peruvian punitive expedition and executed with exception of the cabin boy who was later to assume the rôle of the moribund ancient mariner. Year by year these expeditions set out and year by year they come back, always innocent of treasure except that which comes from life in the open and the adventure of strange places. The latest addition to this harmless outdoor sport is the Scientific Expeditionary Research Association of London composed of two ladies and a stewardess. A yacht has been chartered and will be met at Cocos Island, it is alleged, by the man with the map. After exhuming the treasure, which in this instance is set at £7,000,000, Easter Island, Galapagos and Malpelo will be visited for the purposes of scientific research.

PERSONALS

It is reported that Major T. J. Leary, Medical Corps, United States Army, is to be relieved as superintendent of Colon Hospital about June 1st by Major H. H. Freer, Medical Corps, United States Army. At present Major Leary is on leave status his place being filled by Major Thomas S. Mebane, Medical Corps, United States Army. Upon the completion of his duties on the Isthmus, Major Leary will take station at Fort Slocum, New York.

Among the visitors from the United States on account of the Conference of the Maritime Quarantine Authorities of the West Coast of South America were Assistant Surgeon John D. Long, United States Public Health Service, and Surgeon Samuel B. Grubbs, United States Public Health Service.

Dr. Juan Antonio Lopez del Valle, National Commissioner of Health of the Republic of Cuba, and Dr. Hugo Roberts, Chief Quarantine Officer, who attended the Conference of the Maritime Quarantine Authorities of the West Coast of South America, have returned to Havana, where they are making arrangements for the Pan-American Sanitary Congress which will convene there in November.

COMPLETION OF THE GUATEMALAN FLIGHT

On February 27, 1924, the big Martin bomber and two De Haviland planes which had made the successful flight from the France Field to Guatemala City and return alighted from their 3,000 mile journey and were received by high officials of the Army, Navy and the Republic of Panama. It is expected that the next experimental flights will be routed across Mexico to the United States thus making a trail for flyers from the Canal to Washington. While such flights have an important bearing upon aeronautics and the defense of the Panama Canal, there is a sanitary phase of the matter which must be kept in mind. As intercommunication between countries is increased in rapidity and ease, the possibility of the spread of disease is also increased and the very speed with which an infected person may thus be carried from one country to another will make their early recognition more difficult. The problem of quarantine against aircraft is one which up to date has received relatively little attention. It is true that the United States and the Panama Canal have both enacted regulations covering the quarantine of air craft but as yet they have not been put on a very practicable basis. Manifestly, the boarding of aircraft in the same way that ships are met by quarantine officers is out of the question and the distance of landing fields from quarantine stations makes the inspections of passengers and crew a difficult and time consuming operation. The real answer to the problem is for sanitarians to place their countries in such condition that they cannot spread disease and shall be noninfectible. While the quarantine problem of aircraft may seem at present to be a fanciful one, it is evident the question will soon demand solving.

Book Reviews

INTESTINAL OBSTRUCTION

The Toxemia of Acute Intestinal Obstruction. By R. H. PARAMORE, M.D., F.R.C.S. London: H. R. Lewis and Company, 1923.

Contrary to the usual views that toxemia is one of the main causes of the grave symptoms, even death, in intestinal obstruction, Paramore, while not denying the existence of some toxic products and their effect in this disease, ascribes the gravity of the situation to mechanical factors, among which he includes increased pressure in the abdominal cavity by the acts of vomiting and retching. The association of intoxication with the vomiting, the time relationship between them, seems to denote a dependence of the one upon the other and to explain the difference in these two types. In high obstruction, vomiting comes on early, and with it the exhaustion and other phenomena; in low obstruction, vomiting occurs late, and again precipitately, as it ends the fatal stage of the disease.

In intestinal obstruction, the intoxication arises with the vomiting; in cases in which the intoxication subsides, the vomiting ceases, likewise the straining and the restlessness. The effect of mechanical relief to the obstruction is the cessation of all these; the removal of the stimuli causing pain, the cessation of the violent effort in persistent vomiting, the reduction of the distention by the passage of flatus per rectum, by which the enormous increase of intraabdominal pressure falls, these are the determinant factors in the cure, and they act mechanically. The monograph of Paramore can be highly recommended.

HEMORRHOIDS

Hemorrhoids, The Etiology, Prophylaxis, and Treatment by Means of Injections. By ARTHUR S. MORLEY, F.R.C.S., Eng. Oxford Medical Publications. London: Henry Frowde and Hodder & Stoughton, 1923. Pp. 114.

Morley gives a detailed and succinct description of the etiology and treatment of hemorrhoids. The author is a warm advocate of the injection method for the treatment of internal piles, in fact, he prefers this method to surgery. Regarding his technic, Morley gives the following rules: "My own practice is to inject at each sitting all the internal hemorrhoids that are present. Sometimes this is not possible because immediately after injection, a pile swells up rapidly, and if it happens to be of over the average size, the pile first injected may swell to such an extent that it conceals some of the other smaller ones. The syringe which I find the most useful is known as Dawson's dental syringe. This is made entirely of metal, with the sole exception of a leather washer at the base of the needle socket. It can be sterilized, therefore, by boiling. The solution which I recommend and which I use in the great majority of cases, consists of a twenty per cent. solution of carbolic acid in equal parts of glycerine and water.

"The syringe being filled and all the other requisites being within easy reach, the speculum is introduced and the piles caused to prolapse into it in the manner already described. The parts are next swabbed freely with a weak antiseptic lotion, such as lysol, one dram to a pint. All traces of fecal matter are removed by swabbing, and any surplus fluid is then mopped out. The needle should be entered near the apex of each pile. The proper quantity of solution to inject into each pile is from three to eight drops, according to the size of the pile. I have found that the best interval to leave between each injection is exactly one week. It is my practice to urge that weekly injections should be continued until no trace of any of the piles can be seen. This involves an average of four injections."

The book is very practical and can be highly recommended.

GASTRIC AND DUODENAL ULCERS

Les ulcères de l'estomac et du duodenum. By ED. ENRIQUEZ and GASTON DURAND. Paris: Masson & Co., 1924.

In the last twenty years the question of gastric and duodenal ulcers has been greatly advanced by the united efforts of physicians and surgeons. Notwithstanding the great progress made in this field of medical pathology, the diagnosis of ulcers of the digestive tract and their treatment is at times very difficult. Thus, gastric hemorrhage, which is the most prominent symptom of a peptic ulcer, is not always proof positive of this affection. As is well known, splenic anemia, cirrhosis of the liver, appendicitis and other infectious states of the abdomen can be accompanied by gastric hemorrhages. The diagnosis of ulcer can be made with greater certainty when it has led to complications, principally pyloric obstruction. The x ray helps also in establishing a positive diagnosis when a Haudek niche or a constant deformity of the cap is present.

With regard to the frequency of duodenal ulcers, the authors of the present monograph agree with the American writers that this affection is very common and probably as frequent as gastric ulcer.

INFECTION OF SMALL INTESTINE IN CHILDREN

Würzburger Abhandlungen aus dem Gesamtgebiet der Medizin. Neue Folge herausgegeben von PROF. DR. E. MAGNUS-ALSLEBEN in Würzburg. Die Endogene Infection des Dünndarms beim Säugling. Klinisch-Bakteriologische Untersuchungen von DR. KURT SCHEER, Oberarzt der Universitäts-Kinderklinik mit 66 Abbildungen im Text. Leipzig: Verlag von Curt Kabitzsch, 1924.

This monograph deals with experiments on the endogenic infection of the small intestine in infancy with the aid of the duodenal tube. In healthy children, the stomach and small intestine are practically sterile, but in acute dyspepsias, especially in severe cases, and in those due to parenteral infection, the small intestine shows abundant colon bacilli. The bacterial content of the stomach in such cases varies proportionately to the existing grade of acidity. The acid resistant gram positive flora, particularly gram positive enterococci, withstand all grades of acidity and are therefore physiologically present in the healthy stomach and duodenum. The acid sensitive bacteria of the colon group are killed by pH 4:7. The flooding of the stomach with colon bacilli originates in the duodenum and is possible only when the latter is infected and when the gastric acidity is low. In that case the gastric and duodenal flora are the

same. There is no anacidity or subacidity in dyspepsia, but usually there is hyperacidity. The theory that the hydrogen ion concentration of the chyme in the upper portion of the duodenum determines the physiological sterility is advanced. With alkalinization from primary external causes, such as unsuitable food, overheating, etc., and the resulting increased excretion of alkaline intestinal juice the soil is prepared for the colon bacilli. In general the infection is confined to the chyme and bacteria do not penetrate the intact intestinal wall but only to a slight extent through areas deprived of their epithelium. These bacteria have a marked tendency toward proliferation. Agglutination tests are negative, owing to the inability of infants to produce antibodies. The clinical use of the duodenal tube is well adapted to the investigation of this endogenic infection.

HERNIA

Hernia. By Leigh F. Watson, M.D. With 232 Illustrations. St. Louis: C. V. Mosby Company, 1924. Pp. 660.

This is an excellent book on hernia, adequately illustrated with an excellent bibliography following each chapter. The author takes up first a thorough historical consideration which is interesting and well written; then the general considerations of the various types of hernia with a description of the various operations. The rarer types of hernia, both internal and external, are very well portrayed.

It is delightful to see a book of this kind, so completely up to date, with a thorough discussion, for instance, of the causes of recurrence and a review of such recent literature as Erdmann and Davis's statistics. We believe that the true analysis of such figures is advisable for every one to know. The reviewer thoroughly recommends this work.

CHRONIC AFFECTIONS

Movement in Organic Disease. By Ernest Kingscote, M.B., C.M.Edin., Hon. Physician to St. Pancras Dispensary. Late Physician-in-Ordinary to the Imperial Ottoman Embassy. New York: William Wood and Company, 1924. Pp. xix-187.

The author relates his experiences of many years n the treatment of chronic affections, especially hose of the chest, in which he endeavors to remove he cause of the disease rather than to treat the ymptoms. The subject is discussed from an entirely ew angle. The quotations on cardiac dilatation and he statistics and the dynamics of the chest, taken rom the author's *Asthma: Recent Developments in ts Treatment,* are used to support the argument pre- ented in this book. The good results obtained are ttributed to the possibility of making the fixed chest nobile, thus reestablishing the thoracic negative pres- ure, as in emphysema and allied conditions, and by he ability to reduce the dilated heart by a combina- ion of resisted movements and special breathing xercises, which are fully described. This method f treatment results in a restoration of the respira- ory movement, thereby reproducing the normal horacic negative pressure and avoiding the evil ffects of intrathoracic positive pressure.

The principles laid down also apply to the Nau- eim method of treatment. The treatment outlined s especially effective in cardiac dilatation, which has een greatly neglected by the medical profession, owing partly to inadequate means of measuring the size of the heart and partly to the want of personal touch with the methods advocated. To overcome the former obstacle, the author has devised a pleximeter with which the boundaries of deepseated organs may be delineated even when overlaid by air-containing viscera. Sufferers from fatty degeneration of the heart and angina pectoris and those who have grown old prematurely may be restored to a life of usefulness and comfort by the methods of treatment proposed. The fixed chest and the resulting cardiac dilatation, or vice versa, frequently found in chronic, socalled incurable diseases, must receive attention in the sense of restoring organs and their functions to normal. The keynote of the treatment proposed consists in the ability to change an acquired intrathoracic positive pressure into the normal negative pressure, to establish a definite ratio between the respiratory movement of the upper chest, the lower chest and the abdomen, and to reestablish the errant respiratory excursions in the various forms of fixed chest—feats that have not been accomplished heretofore. With the resulting improvement in the circulation, many chronic diseases, such as emphysema, cardiac dilatation, fatty degeneration of the heart, asthma, pulmonary phthisis, diabetes mellitus, chronic dyspepsia with gastric dilatation, myxedema and the goitres, chest deformities, nerve disorders, athlete's heart, epilepsy and obesity, are corrected. Thirty-five illustrative cases are cited.

METHODS IN MEDICINE

Methods in Medicine. The Manual in the Medical Service of George Dock, M.D., Sc.D. By George R. Herrmann, M.D., Ph.D. St. Louis: The C. V. Mosby Company, 1924.

This manual presents the system of organization which proved so successful in the medical service of Dr. George Dock at the Barnes Hospital, St. Louis. It is intended to be a practical ward or bedside guide to all those individuals who go to make up a service. The manual is divided into five parts.

Part I is made up of administrative methods, rules and detailed regulations to insure prompt, careful, complete and uniform handling of each case. These methods include a system of the duties of the resident staff from the resident physician down to the clinical clerks; notes and suggestions for history taking, physical examination and laboratory work, with the routine requirements for each type of case and the details of the ordinary clinical laboratory procedures. Part II consists of the special methods of clinical and laboratory investigation applied in a more complete study. Part III outlines acceptable therapeutic methods with emergency measures and subsequent treatment and management. Part IV contains approved dietetic methods with practical diet lists. Part V illustrates recording and graphic methods in the form of a composite history with representative charts of data from the usual types of cases.

The efficient and harmonious administration of the professional services of a hospital requires careful attention to detail, and standardization of methods. This applies not alone to administrative methods but to special methods of clinical and laboratory investigation and therapy as well. Hospital administrators and chiefs of service will find Dr. Herrmann's

book a very useful guide. It should not and cannot, of course, be employed in every institution without modification, for each hospital has its own special problems, but it should prove invaluable as a basis for organization.

One of the important educational aspects of an internship, which is too often neglected by hospital authorities, is the inculcation of careful and systematic methods, not alone in diagnosis, but in everything that concerns the relationship of the physician with the patient, the institution, and his coworkers. Along these lines this book will be very helpful. It would be well if a copy of it were placed in the hands of every resident physician.

PAUL EHRLICH

Paul Ehrlich als Mensch und Arbeiter. Erinnerungen aus dreizehn Jahren seines Lebens (1902-1915) von Martha Marquardt. Mit einer Einführung von Dr. Richard Koch, Privatdozent für Geschichte der Medizin an der Universität Frankfurt a. M. Berlin und Leipzig: Deutsche Verlags-Anstalt Stuttgart 1924. Pp. 112.

As secretary to Paul Ehrlich and as a result of close association in his work, the author was enabled to give the world glimpses of the true character of one of the greatest geniuses of modern times. This book contains numerous reminiscences and anecdotes, which reveal the characteristics, habits of thought and action, peculiarities and idiosyncrasies of Ehrlich the man at his work in his laboratory and at home. Genius has been described as an infinite capacity for work and there is no better example of genius than Ehrlich. His personal attire received but scant attention. He wasted little time on etiquette, but nevertheless he was beloved by all who came in contact with him. His simplicity was at times even childlike. He was the traditional "absent minded professor." He loved popular music, a specially heavy smoke, intensely fragrant and gayly colored flowers, a simple game of cards called patience, and he had a penchant for gayly colored pencils. His leisure reading was confined mostly to detective stories. He had a great love for animals and watched smaller animals, like insects and birds, for hours. His greatest extravagance consisted in the buying of books, all of which contained notes and markings in the margins. Borrowed books he invariably failed to return. His experimental work was planned on a card index system. His relations with his associates, assistants and employees were extremely cordial. Those in need, especially when engaged in scientific pursuits, were always supported and encouraged by advice and money, given with a free hand; he was charitable to a fault. Unfounded criticism and professional envy pained him mentally and physically. He believed in practical education, especially as it is planned in the United States. He was an indefatigable worker, as evidenced by his 606 and 914. He worked much and published little. His work he enjoyed like a child enjoys play. He deprecated the World War and believed that it should have been avoided. The numerous honors, medals and titles conferred upon him he did not enjoy as much as he cherished his honorary membership in the German Chemical Society. The man's soul is beautifully bared. Once begun, one is very reluctant to lay down the book until it has been read in its entirety.

Medicoliterary Notes.

Moses Maimonides, philosopher and physician, wrote about 1170: "Man should only believe what he can grasp with his intellectual faculties, or perceive by his senses, or what he can accept on trustworthy authority."—*Annals of Medical History.*

* * *

The Walter and Eliza Hall Institute of Research in Pathology and Medicine of Melbourne, Australia, has issued the first volume of its collected papers, covering the years 1920-1923. The volume is composed of reprints, bound together, from the *Medical Journal of Australia,* the *Journal of Pathology and Bacteriology,* the *Quarterly Journal of Medicine,* the *Lancet,* and *Una.*

* * *

The writer, Laura Kieler, nicknamed by Ibsen "the lark-bird," who was the original or Nora in *The Doll's House,* recently celebrated her seventy-fifth birthday. She lives in Northern Schleswig, and has devoted most of her life to writing in behalf of her country.

* * *

"Penguin," in the London *Observer* of February 10, writes a charming article on the subjects of umbrellas famous in literature. He feels that *the* umbrella in fiction was that of Mrs. Gamp. Others of note were Robinson Crusoe's and those mentioned or described by Dickens, Meredith, Kipling in *Kim,* Mrs. Gaskell in *Cranford,* and Miss Austen in *Mansfield Park.*

* * *

A plea for uniform standards and more practicable regulations for swimming pools is made by Arthur M. Crane, mechanical engineer, in a recent issue of the *Nation's Health.*

* * *

The recent earthquake and fire in Japan and resulting conditions are described from the point of view of a sanitarian by Dr. Kitasato of the Institute for Infectious Diseases at Tokyo, in the *Nation's Health* for February.

* * *

The *Westminster Gazette* of recent date announces the death of a curious inmate of the South Kensington Museum of Natural History. This was the grub of an unknown beetle which had lived, the paper states, for thirty years without ever undergoing the transformation into an adult. For six years this beetle had been in the care of a single keeper and with him had traveled half way around the world. Its habitat was a pencil case.

* * *

Dr. Makovitski, who was Tolstoi's physician, secretary, nurse and companion, has bequeathed in his will to the Prague National Museum a new collection of Tolstoi papers, consisting of letters, incomplete articles, and odd notes and scraps of paper, some of which bear interesting inscriptions.

* * *

It is reported that a group of industrial hygienists in and about Switzerland, most of them physicians, have arranged for an international meeting for the study of industrial hygiene problems to be held in Geneva, July 18-20, 1924.

* * *

Marcel Proust, for many years a bedridden invalid, is said to have called for his latest novel, when he felt that death was upon him, in order to correct with his own hand the passages about the demise of one of his characters, which he felt was not sufficiently true to reality. In this deathbed scene, he remarks that nature would permit only brief illnesses, which would cure themselves, but that "medicine has taken upon itself the art of prolonging them."

* * *

Dr. G. E. Harmon, of Cleveland, Ohio, has in the *American Journal of Health* for March an article, with full statistical data, on the course of mortality from puerperal septicemia for certain States of the United States from 1900-1920.

* * *

Mr. Richard Hughes has written a play especially for the radio. Faced with the apparently insuperable difficulty of necessary invisibility of his actors this ingenious dramatist hit upon the notion of placing his scene in the pitch

black blackness of a caved in coal mine. Listeners-in received the instructions to turn out the lights in their rooms in order to create the atmosphere of a coal mine . . . and were further warned that, if they thought the tragedy would be too dreadful for them, tney had better not listen in. The whole of the mining accident was sent through the air, with crashing and cursing . . . the rush of icy waters, and the final sound of the picks as the rescue party approached. The whole cast consisted of one resourceful individual plus the book of the play and a choice assortment of noise-making implements. As an English paper observes: "It seems as though a new member had been found for the club of queer trades—namely, the playwright whose chief characters are 'noises of.'"—*Living Age.*

* * *

Some interesting experiments have recently been made as to the content of sea foods. Dr. Donald K. Tessler, of the U. S. Bureau of Fisheries, has found that oysters, clams, and lobsters are rich in iodine, containing approximately 200 times as much as beefsteak or milk, while the shrimp contains about 100 times as much. These results should be of the greatest significance in regions where goitre is endemic. Mme. Randolin, chief of the French Institute of Food Hygiene, reported recently to the Academy of Science of Paris that oysters are a preventative and a quick and certain cure for scurvy. This is due to their high vitamine content.

* * *

Whether modern civilization will be saved or destroyed by science is still uncertain. Science has not only abolished the chivalry of war; it has taught the belligerents to use devices which even twenty years ago would have been thought inconceivably barbarous. And far more destructive discoveries are probable.—*Dean Inge, in London Morning Post.*

* * *

The *Clinic* is the title of a new journal of industrial surgery and hygiene, published by the Maryland Casualty Company, of Baltimore. The first number is devoted to the importance of a complete physical examination; the second emphasizes compensation features of injuries to the skeleton with joint involvement and traumatic neuroses.

* * *

Dr. Otfried Foerster, professor of psychiatry and neurology at Breslau University, who attended Lenin in his last illness, writes of this in a recent issue of the Vienna *Neue Freie Presse,* translated by the *Living Age* of April 5. Lenin's illness, says Dr. Foerster, was arteriosclerosis, probably due to an inherited tendency, for his father died relatively young of a similar arterial disease. "Undoubtedly his abnormally heavy responsibilities and duties, and the life of constant excitement he led, decidedly encouraged the development of this predisposition. . . . So insistent were the demands upon his time, as he himself told me, that for weeks and months he had scarcely two hours' sleep out of the twenty-four."

* * *

In *Public Health Reports,* for Feb. 15, 1924, Prof. James A. Duoll, of the School of Hygiene and Public Health of Johns Hopkins University, and Dr. Roy P. Sandidge, of the U. S. Public Health Service, discuss the justification of the prophylactic use of diphtheria antitoxin. The conclusion is that in young children the use of prophylactic antitoxin is clearly not only justified but demanded. In the same issue, Atherton Seidell, Ph.D., also of the U. S. Public Health Service, describes the preparation of the crystalline picrate having the antineuritic properties of vitamine B, recently so widely commented upon by the press.

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Dr. William Stekel's recent work, *Peculiarities of Behavior,* has been translated into English and is published in this country by Boni & Liveright.

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The secretariat of the Confederation of Italian Facisti Trades Unions has sent a communication to the U. S. Bureau of Labor Statistics stating that, with the object of uplifting the working classes socially, the confederation has decided to give its formal endorsement to a new movement called *dopolavoro* (leisure hours), which is intended to develop and effect a national program of educational recreation and instruction for the moral and physical elevation of the Italian workers. The *dopolavoro* centres, which are already functioning successfully in various provinces in connection with the Facisti trade unions, afford the workers an inducement to keep away from saloons, and to devote their spare time to such lines of recreation and sport as are recognized to be the most suited for improving their physical, intellectual, and moral state. In conformity with the above decision there has been created at the headquarters of the confederation a central bureau for the *dopolavoro* movement, with the object of organizing and developing this movement on a national scale.—*Monthly Labor Review.*

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A recent issue of the *New York Medical Week* praises the valuable public service rendered by Dr. Carleton Simon, special deputy police commissioner, in charge of the narcotic division of the New York City Police Department, in his address on the narcotic problem given before a meeting of the Medical Society of the County of New York. Dr. Simon's conclusions are published in the *Medical Week.*

* * *

The followers of Ghandi in India have made an appeal to have the year of his incarceration in prison stand as the first of a new era, for which calendars are already being made and published. According to this system of reckoning time, the year one began on March 18, 1922, and ended March 17, 1923. The plea is based on the argument that the date of Ghandi's imprisonment had great religious significance, like that of the birth of Christ or that of the Hegira, and therefore marks the beginning of a new era in the history of the world.

* * *

While Ernst Toller, German playwright and revolutionist, lies in prison in one German state, his new play, *Hinkermann,* is being produced in the State Theatre in Dresden. *Hinkermann* has aroused a great storm among the conservatives and Nationalists, chiefly because Toller is an avowed Communist. There was such a riot on the first night of the play that the police had to take care of the theatre. Gas bombs were exploded and one of the audience died from fright.

* * *

Antimalaria sanatoria for children have been established in Italy in various provinces, we are told in the *World's Health.* In the most seriously affected provinces, there are thousands of pale, thin, undersized children in families who have no knowledge nor equipment with which to fight the disease through a campaign which involves ceaseless patience and perseverance. Another obstacle exists in the common belief that malaria is caused by the hand of fate. The only way to save the children is to take them away from their homes and submit them to regular and intensive medical care. The institution at Borghetto, established elsewhere in 1910, but in 1915 moved and enlarged, may be cited as one of the best of its type. It is located in a large villa, and is a veritable agricultural colony, the children doing a great part of the work, and receiving medical treatment, schooling, and proper homelife.

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The transactions of the Fourth Annual Conference of Malaria Field Workers, held at Chattanooga, Tenn., in November, 1922, have recently been issued as *Public Health Bulletin* No. 137 of the U. S. Public Health Service.

* * *

The supply of crowned heads and other royalties has been so greatly depleted during the last several years that the *Almanach de Gotha,* a hundred and sixty years old, has ceased publication. This *Who's Who* of sovereigns and their families was one of the few institutions of the world to successfully defy Napoleon, whom it for years refused to recognize because he was not of noble birth. The great emperor for this reason tried to suppress its 1808 edition and threatened to confiscate its invaluable archives. This fear alone finally led to his name being included in the list of sovereigns. America was not included until the time of President Monroe, and the only American woman who was considered to have become a member of a real royal family by marriage was Alice Heine of New Orleans, whose first husband was the Duc de Richelieu and her second the Prince of Monaco.

Abstracts from Current Literature

GASTROENTEROLOGY

Investigations on the Gastric and Pancreatic Functions Following Extensive Resection of the Stomach.—Georg Stein and Egon Fried (*Wiener klinische Wochenschrift,* November 1, 1923) conclude that the extensive resection of the stomach in the vast majority of cases leads to anacidity and hypochlorhydria of the gastric juice. At the same time the ferment content of the gastric juice falls more slowly than the acidity. After about two months after the operation a more stable condition is reached, which then undergoes changes very slowly. Within the first two months the pancreatic functional test shows, as a rule, a slightly less active pancreatic juice than can be found in the fasting stomach; later on this relationship is somewhat reversed. There is no such condition as a functional pancreatic achylia or hypochlorhydria after gastric resection, but there is rather a compensatory hyperchlorhydria. The authors consider the tests carried out with the duodenal tube as useful and as a very important aid to the methods usually employed for the study of the changes occurring after resection of the stomach.

Clinical Study of Esophagospasm.—F. Lust (*Monatsschrift für Kinderheilkunde,* October, 1923) classifies esophagospasms into three main types: 1. Primary, essential esophagospasm, which is a neurosis that usually occurs in earliest infancy without any previous lesion worthy of mention. It may affect all parts of the esophageal tube including the cardia which forms a functional unit with it, in which case it is preferably called cardiospasm. A special form is the periodical esophagospasm, in which periods of patency alternate with periods of complete disturbances of food passage (esophageal crises). 2. Secondary esophagospasm, the socalled lesional esophagospasm, in which an organic change (stricture) produced by some lesion (for example, cauterization) produces the first occasion for the occurrence of spasms. A marked psychic trauma (sticking of food, severe swallowing the wrong way) may act in the same way. 3. The esophageal emotional spasms of earliest infancy, in which socalled esophageal vomiting occurs when there is marked aversion to food (for example, in the forced feeding of an undesired food, as after vegetables, pap, etc.), whereas desired foods do not give rise to any spasm.

Appendicitis, Its Infectious Cause and Its Endemic Occurrence.—A Fonio (*Schweizerische medizinische Wochenschrift,* October 11, 1923) found gram positive diplococci and bacilli in the various layers in the primary, beginning, nonsuppurative, nongangrenous or perforating appendicitis, which most probably are the cause of the appendicitis. Basing his opinion on the series of 275 cases in which an operation was done, he concludes that a contagion of the infection is frequently possible, inasmuch as fifty-five per cent. of the cases of appendicitis were definitely familial (usually in brothers and sisters) or in other persons in the immediate vicinity. This occurrence bears the character of an endemic with various periodical intervals (one to three years) in the individual cases in the household.

Bacteriophages.—R. Doerr (*Schweizerische medizinische Wochenschrift,* November 1, 1923) remarks that the d'Herelle theory of bacteriophages is recognized only by a few authors. He considers the transferable lysins (bacteriophages) as hormones for the growth of the bacteria. It is certain that they cannot be produced by the destruction of the bodies of the bacteria, as is the case with the endotoxins. The important feature of this question is not the massive destruction of the bacteria, but the vital processes which precede this terminal phase. The assumption that the transformation of the normal bacteria into formers of lysin is the result of ferments, contains a nucleus of truth. However, it is unlikely that the transferable lysins are trypsin. Experiments have shown that newly born chicks that have been raised in a sterile manner possess a potential capacity for the production of lysins even before their natural appearance and that this capacity is brought into action if germs of the typhoid colon group, in which a preexisting capacity of lysin production (contamination with bacteriophages) can be eliminated, are given by mouth. No closer relationship between autolysis and transferable bacteriolysis can as yet be designated as definitely established. However, some authors say that they have shown that certain bacteria acquire the capacity for lysis on aging, but the author was unable to observe this in cultures which could become lysinogen on contast with lysin. In order to prove the living nature of the bacteriophages, d'Herelle and others cited the results of their dilution methods, but the author was enabled to show that the initial concentration of lysin, which starts the phenomenon into action, must be the greater, the more poorly the bacterium is nourished. This does not coincide with the assumption of a living endobacterial ultramicrobe. Up to the present time the experiments are insufficient to the precise formulation of a complete theory on the nature of bacteriophages.

Relation of Gastric Ulcer to Carcinoma.—John Morley (*Lancet,* October 13, 1923) states that while one cannot deny the possibility of cancer developing in the edge of a chronic gastric ulcer, or in some part of the stomach that is or has been afflicted by a chronic gastric ulcer, his investigations provide no evidence that the development of carcinoma on gastric ulcer occurs with anything like the frequency affirmed by some authorities. The evidence set forth by the author points to the conclusion that a patient with a chronic simple ulcer of the stomach is little, if at all, more liable to develop carcinoma than a healthy individual. He finds that roughly thirty per cent. of cases of carcinoma of the stomach give rise to symptoms which simulate more or less closely those which are usually associated with simple ulcer and the author believes that it is this ulcer simulating cancer which is responsible for the belief in the cancerous degeneration of simple ulcers.

Nature and Treatment of Sprue.—H. H. Scott (*British Medical Journal,* December 15, 1923) associates the carpopedal spasms in severe cases of sprue with the carpopedal spasms of calcium deficiency together with diarrhea and intestinal toxins and parathyroid control. The treatment of this condition with calcium lactate leads only to temporary improvement, but with parathyroid extract, all the more acute symptoms disappear and the patients are cured permanently. The calcium content of the blood does not depend to any great extent upon the amount of calcium ingested, but upon the efficiency of the calcium regulating mechanism, including the parathyroid glands with their power of detoxication and regulation of the calcium metabolism. Deficiency of calcium may, therefore, be regarded as an indication of the absorption of toxins. If there is an excessive amount of fat in sprue, the calcium is excreted in excess and there is intestinal intoxication; or, there may be an excess of protein with the formation of intestinal toxins. In both conditions the detoxicating function of the parathyroids is taxed excessively, resulting in a disorganization of the calcium regulating function and a possible additional diminished absorption of calcium. Accordingly, both of these functions of the parathyroid glands are disturbed.

Carbohydrate Fermentation of Human Feces.—The fermentation test is suitable for the study of the carbohydrate fermentation of human feces and valuable in determining its basic microbial activity. E. Fricker (*Schweizerische medizinische Wochenschrift,* December 13, 1923) shows this by numerous experiments. On the addition of a one per cent. glucose solution to normal feces, marked fermentation occurred without distinct secondary fermentation. Increased peristalsis does not always lead to increased fermentation, as this depends principally upon the intestinal contents and the intestinal flora. The absence of gas formation is demonstrable in spite of the microscopical evidence of abundance of starch as a result of the lack of exciters of fermentation. The glucose test always results negatively. The effect of animal charcoal depends upon the adsorption of acids (lactate and fatty acids) and as a result there is diminution of peristalsis, improved resorption, and reduction of the conditions of life for the exciters of fermentation. There is no adsorption of gas in the fermentation test through the charcoal. Experimentally, bismuth strongly inhibits the fermentation, but a 0.1 per cent salicylic acid solution has no inhibitory action on fermentation.

Relation Between Growth Promoting and Antirachitic Functions of Certain Substances.—H. Goldblatt and S. S. Zilva (*Lancet*, September 29, 1923) conclude that the growth promoting and antirachitic properties of codliver oil are inactivated at different rates by heat in the presence of air. There is a great disparity between the growth promoting and the antirachitic potency of spinach. A certain sample of hardened codliver oil had been found to possess high growth promoting and antirachitic activity. The above observations give further support to the hypothesis of McCollum, Simmonds, Shipley and Park that the antirachitic and the fat soluble A factors are different principles.

Differential Diagnosis of Rheumatoid Arthritis as a Clinical Entity.—Vincent Coates and R. G. Gordon (*British Medical Journal*, September 29, 1923) stress the presence of achlorhydria as an etiological factor in these cases. The achlorhydria precedes not only the anemic conditions, but also chronic gastritis which has been believed to be the cause of the achylia. The gastritis is due to the failure of the normal softening and diluting action of the gastric juice, and as a result of the insufficient digestion in the stomach, the intestines are irritated and intestinal dyspepsia results. The proteins reach the intestines in an undigested state, together with bacteria, which are normally destroyed by the action of the gastric juice. The proteins, therefore, undergo still greater decomposition, resulting in the absorption of toxins.

Resection in Perforated Gastric and Duodenal Ulcer.—Anton Mülleder and Johann Neuberger (*Wiener klinische Wochenschrift*, October 18, 1923) states that in perforated gastric and duodenal ulcer the success of resection depends upon the duration of the perforation and the condition of the patient. Resection is the method of choice in every case up to twelve hours, but the authors believe that if the patient is in good condition the resection may be done successfully much later. However, individualization is necessary. Otherwise palliative operations are indicated. Resection provides the necessary security, whereas suturing leaves behind a feeling of uncertainty and the focus is left behind in the body and one can never tell whether secondary digestion may not occur. This procedure seems to be an unnecessarily severe undertaking, but together with gastroenterostomy the difference in time is not very great. In addition, the interference is very well borne. The authors are decidedly in favor of irrigating the abdominal cavity in pyloric stenosis and in gross and abundant soiling of the peritoneum with food remnants. Every form of drainage of the abdominal cavity and possibly even the subcutaneous drainage tube should be avoided. The form of anesthesia recommended is infiltration of the abdominal wall, followed by the induction of the second stage of ether anesthesia, which should be very light during the time of the intestinal suturing. For prognostic and scientific purposes it is advisable to examine the free fluid in the abdominal cavity as to its hydrochloric acid content, if possible during the course of the operation.

Congenital Diaphragmatic Hernia of the Right Side; Its Diagnosis in Life.—Philip Moen Stimson (*Archives of Pediatrics*, October, 1923) states that the usual symptoms described in cases of congenital hernia are cyanosis, rapid respiration, a sunken abdomen, an overdistended chest and dyspnea—all appearing very soon after birth. In those who survive longer, dyspnea is generally the most prominent symptom; it may be constant; it may occur in severe paroxysms, and there may be attacks of cyanosis often of great severity, owing to the accumulation of gas in the herniated hollow viscus. Vomiting is usually mentioned among the symptoms. In the author's cases of right sided hernias respiratory symptoms were noted only once in four cases, but all of them showed marked persistent vomiting, profuse and often projectile, and so repeated so frequently as to affect the nutrition profoundly.

The physical signs depend upon the size and location of the hernia and the nature of the herniating viscus. With large hernias on the left side there is usually considerable displacement of the heart to the right. The physical signs in the lungs vary considerably; there may be signs of a pneumothorax or the presence of fluid may be suggested. With a rightsided hernia there may be a layer of gastric tympany between the lung resonance and the area of liver dullness. Fluoroscopy or x ray plates clear up the diagnosis in most if not all cases. The diagnosis can often be made even without the use of barium. The line of the diaphragm may show a portion regular and a portion blurred with a gas shadow above. The hernial sac as a whole may be distinguishable as well as the fluid or gas contained therein. In questionable cases, insufficiency or eventration of the diaphragm must be borne in mind with its markedly upward and yet symmetrical displacement of an entire half of the diaphragmatic arch together with the organs situated below that half. Here, of course, there is no loss of contour of the diaphragm nor do gas shadows appear above the liver shadow. A point usually strongly in favor of the diagnosis of hernia is made when lung tissue is seen through the shadow of the gas filled stomach. Also evidences of gastrointestinal obstruction found often in hernias are not found in cases of insufficiency.

Chronic Diseases of the Colon.—E. B. Gunson (*New Zealand Medical Journal*, August 1923) thus outlines the treatment he advocates: The first consideration is to unload the bowel. The patient is put to bed. Water only is given for twenty-four hours. It is found advisable to allow a cup of tea once or twice during the day, as this affords a certain amount of stimulation and prevents uncomfortable headaches and nausea. An ordinary specimen of stool is investigated, but this affords little indication of the state of the colon. Where exhaustive laboratory tests can be made this is unquestionably the procedure of choice. As a rule, however, other and more simple means may be adopted as follows: On the second day colon lavage is commenced and applied daily until the colon has been freed of retained products. This treatment may extend over a week or ten days. In the meantime the patient is placed upon a modified diet consisting of milk or cocoa, an egg, a small quantity of meat, potato, and butter. As the colon lavage is proceeded with information is gained which throws important light upon the nature of the pathological process.

In patients who are subject to disorders of protein metabolism putrefaction of the bowel contents is present and the stool reaction is usually alkaline. Fermentation, with the evacuation of highly acid contents, indicates carbohydrate disturbance. Either of these conditions may be due simply to excess of these elements in the diet. On the other hand they may arise from inherent inability on the part of the organism to deal satisfactorily with them. Abnormal bacterial action is also a common source of trouble. Where there is active ulceration of the bowel pus may be present in quantities appreciable to the naked eye. Mucus, which is sometimes absent for long periods, and may be absent at the onset of the investigation, usually makes its appearance shortly after irrigation has been commenced. It is produced in large quantities after the removal of scybala, especially where the retention of the latter has led to erosion of the mucous membrane.

Scybalous masses, sometimes in large quantities, are removed in nearly all cases after a few days' treatment. These can be palpated very readily and their slow progress along the colon can be detected. They vary greatly in appearance. It is not unusual to find them entirely dehydrated, floating in water like pieces of cork. At times they present on their surface castlike impressions of the eroded bowel wall. In mild cases they have the appearance of being simply coated with mucus.

Bowel tissue which has been destroyed by ulceration makes its appearance. Mucous membrane appears in the form of shreds and long strings and even casts of considerable size. Muscle elements are difficult to recognize. As a result of constipation these patients frequently suffer from hemorrhoids. Apart from pain and bleeding which result from their presence, they constitute a difficulty in treatment, interfering with the passage of the colon tube; in some cases a speculum is required in order to pass the tube. After the colon has been unloaded of its retained products the general condition of the patient is greatly improved. The skin quickly regains a more normal appearance, anorexia disappears, and the patient sleeps more comfortably.

The subsequent local treatment of the bowel depends upon the presence and extent of inflammation and ulceration. Lavage is a valuable help but must be carried out with care. The two main indications for its continuance are: Persistent pain with the passage of mucus, and the retention of the bowel contents with the production of either toxic symptoms or pressure symptoms. If the liquefaction of the

bowel contents produces marked toxic symptoms from absorption, then it should be curtailed. The use of enemata in diseases of the colon is to be avoided. Intestinal antiseptics are of little value. Mineral oils are good as lubricants, but form no substitute for aperients, which must be used in many cases to insure satisfactory daily action of the bowel.

In undertaking the dietetic treatment an investigation as exhaustive as possible should be made of the stomach contents. In some cases it is found that what have been regarded as purely stomach symptoms have disappeared after the large bowel has been treated; in others, defects in gastric secretion and other stomach disturbances interfere seriously in applying the appropriate treatment to the disease of the colon. Where ulceration of the colon is present patients require a diet restricted both in quantity and in the nature of its elements. Fruit and green vegetables are not well borne, though a minimum can be tolerated. Milk is most valuable and is as a rule, easily digested. Patients who have lost much weight gain rapidly once the colon has responded to treatment, on a milk diet, a maximum of six pints in twenty-four hours, given at hourly intervals during the day, being aimed at. After the acute ulceration has subsided they do well on a diet of protein and fats with a minimum of carbohydrates. Patients suffering from cecal stasis are intolerant of protein and the diet consists of carbohydrates, fats, fruit, vegetables, with a small quantity of milk and not more than two eggs in twenty-four hours. Spastic constipation calls for regulated exercise, preferably in the open air, and a liberal allowance of vegetables and fruit.

Value of Watercress as a Food.—Harold Scurfield (*British Medical Journal,* October 27, 1923) recommends the more extensive use of watercress as a food, as it contains all of the three vitamines. It is easily cultivated and is a cheap green vegetable which need not be cooked. In addition it is available throughout the year. Its more extensive use may be of considerable assistance in correcting many dietary errors the result of city life.

Effect of Accessory Food Substances Upon the Blood.—As a result of his investigations, Kurt Jonas (*Monatsschrift für Kinderheilkunde,* September, 1923) was enabled to demonstrate that the same changes occurring in germination, which allow the antiscorbutic factors to develop, also lead to the formation of substances, which exert a marked influence upon the construction of the blood. The amount of the hemoglobin and the number of the red blood cells are increased to a marked degree as a result of the feeding of these substances in guineapigs.

GYNECOLOGY AND OBSTETRICS

Routine, Prophylactic Administration of Pituitary Extract in the Third Stage of Labor.—In comparison with the expectant, physiological method of treating the third stage of labor, A. Reist and S. Guggenheim (*Schweizerische medizinische Wochenschrift,* October 25, 1923) found that the administration of pituitary extract at the beginning of the third stage of labor gave the following results: 1. The average duration of the third stage was not shortened. The course of this stage was accelerated in a majority of cases, but it was also prolonged by the appearance of a stricture at the internal os of the cervix. 2. The average loss of blood was not measurably diminished during the third stage and an antihemorrhagic effect of the prophylactically administered pituitary extract was not observed. The number of hemorrhages and, particularly, serious and profuse hemorrhages of more than eight hundred c. c. of blood, were not only not diminished but were even increased. 3. Disturbances of the third stage occurred somewhat more frequently than with the purely expectant treatment, because the placental labor pains, induced by the injection, often appeared before the uterus reached the stage of retraction, which is necessary for the course of the physiological third stage. 4. The number of atonic secondary hemorrhages in undisturbed course of the third stage were diminished by the injections. The frequently made assertion that the pituitary medication readily leads to atony in the third stage after expulsion of the placenta, could not be confirmed in the author's material. 5. In those cases, in which disturbances in the form of hemorrhages appeared without pituitary medication in former third stages, the injections acted favorably, inasmuch as they reduced the number of the repeatedly pathological courses of the third stage to a fractional part of the cases. In such cases the prophylactic injection of pituitary extract is indicated at the beginning of the third stage. 6. There were no essential differences as regards the mechanisms of the separation and expulsion of the placenta in comparison with those occurring with expectant treatment. There was no indication for manual separation of the placenta either in the experimental or in the control cases. 7. In regard to the completeness of the membranes: In the cases treated with pituitary extract, partial retention of the placenta occurred just as often in the treated cases as in the untreated control cases. The membranes were expelled completely more often in the treated cases than in the untreated cases, but his was not observable clinically either by better involution or by a more favorable appearance of the lochia.

Vagotonia as a Symptom of Pregnancy.—On reviewing the results of his experiments, Nicolas Louros (*Zentralblatt für Gynäkologie,* October 27, 1923) arrives at the following conclusions: During pregnancy there is a disturbance in the equilibrium of the vegetative nervous system, which results in an increased sensitiveness of the parasympathetic system—vagotonia. The most prominent symptoms found by the author were: 1, reddening of the face; 2, a brunette type; 3, a positive Aschner symptom; 4, a positive Czermack symptom; 5, a positive endothelial symptom; 6, increased secretion of sweat; 7, lacrimation after an injection of adrenalin without any motive, and 8, a vagotonic adrenalin blood pressure curve. The experiments show that there is a hypersensitiveness of the parasympathetic system during pregnancy, especially in eclampsia. The few sympathicotonic curves observed indicate that sympathicotonia existed outside of the pregnancy, but this was compensated by the vagotonia of pregnancy toward the end of the pregnancy. The sympathicotonic curves of eclampsia should be interpreted in the same manner.

Taken by and large, the following conclusions may be drawn: 1. The injection of adrenalin during pregnancy produces a vagotonic blood pressure curve which gradually and usually increases toward the time of delivery, called the vagotonia of pregnancy. 2. Primary sympathicotonic phenomena are compensated during the pregnancy by this vagotonia of pregnancy. 3. Vagotonia of pregnancy is most pronounced in eclampsia. 4. It is produced by an unknown stimulation, the result of the processes of pregnancy.

Pathogenesis of Corpus Luteum Cysts.—As a result of his experiments, E. Vogt (*Zentralblatt für Gynäkologie* October 27, 1923) draws the following conclusions: The theory of the inflammatory origin of corpus luteum cysts is still unshaken. The theory of metastatic infection, however, has not been given sufficient consideration. Infection by way of the appendix does occur in isolated cases, but does not constitute the rule. Gonorrhea is usually considered only as a secondary complication. No connection between genital tuberculosis and the formation of corpus luteum cysts was observed. No definite conclusion can be drawn as yet regarding the theory of the formation of cysts in connection with dyspareunia. The theory of the development of luteum cysts as a result of the irritative effect of the cyst contents has no foundation. Clinical observations and theory do not favor the endocrine theory. The author concludes that the formation of corpus luteum cysts must be due to a sort of constitutional disease. The inflammatory irritation can be considered as the primary cause only if the prerequisites of the formation of a cyst are present, or if there are peculiar primary conditions in the corpus luteum itself or in the glandular tissue of the ovary, which in turn are of an endocrine or purely constitutional nature.

The Intravenous Use of Forty Per Cent Urotropin Solution in Gynecology.—Ernst Quack (*Zentralblatt für Gynäkologie,* December 15, 1923) does not favor the use of intravenous use of large doses (five c.c.) of urotropin as a prophylactic because of the severe vesical spasms and painful urination occasionally produced. Harmful secondary effects were not observed even in old, debilitated patients. A single intravenous injection of three c.c. of a forty per cent. urotropin solution produces a spontaneous, almost painless urination in ninety-five per cent. of cases in which there was postoperative retention of urine after twenty-four hours, and therefore, it replaces catheterization, except in a few cases. In beginning as well as in neglected cases of cystitis strikingly good therapeutic results are obtained with the intravenous use of urotropin.

Simultaneous Interruption of Pregnancy and Sterilization.—Hermann Freund (*Zentralblatt für Gynäkologie,* October 20, 1923) is in favor of the Sellheim method of interrupting pregnancy and sterilizing at one sitting. He makes the smallest possible abdominal incision, draws the uterus forward and incises the anterior surface of the body of the uterus. The ovum is loosened by blunt dissection and without rupturing it. The uterine wall is closed with interrupted sutures of silk. The sterilization of the fallopian tube is accomplished in the following manner: The tube is divided and the attached silk ligatures of the one end of the tube are used for purposes of ventrofixation of the uterus and the other end of the tube is buried in the peritoneum. In a series of seventy operations of that type the author did not encounter a single case of failure. Temporary sterilization of the tube in one case was accomplished by external fixation of the ampullæ in the abdominal wall and in another case the ampullæ were buried beneath the vaginal flaps at the time a vaginal interposition operation was also done.

Genesis of Icterus Neonatorum.—Max Turolt and Otto Tezner (*Zentralblatt für Gynäkologie,* October 20, 1923) found that the bilirubin content of the umbilical vein was greater fifteen times and diminished in the artery nine times in a series of twenty-five cases examined; the artery and vein showed equal amounts of bilirubin in one case. These differences are too great to be explained by errors. Consequently no relationship to the later developing icterus in the child could be demonstrated. The authors are inclined to believe that bilirubin is formed both in the fetus and in the placenta, but direct evidence of this could not be adduced by perfusion experiments on the surviving placenta. The placenta does not allow direct bile pigment from the mother to pass into the fetus.

Hemolyzed Autogenous Blood as a Nonspecific Stimulant.—Rob. Zimmermann (*Zentralblatt für Gynäkologie,* September 22, 1923) has injected twenty c.c. of hemolyzed autogenous blood subcutaneously or intravenously in cases of ovarian hemorrhages, and also in the hemorrhages of puberty and the climactrium, and in severely deteriorated carcinomatous cases, and has achieved good results with it. The hemolysis of the autogenous blood is accomplished by placing two c.c. of distilled water into the syringe before aspirating the blood from the vein of the arm.

Bumm's Method of Collifixation of the Uterus.—H. Keitler (*Zentralblatt für Gynäkologie,* October 20, 1923) at the present time carries out the fixation of the cervix with auxiliary operations as the method of choice in cases of extensive prolapse, especially where these is prolapse or complete prolapse or retroflexion of the uterus in women of the childbearing age, but also at a later age. The various steps in the operation are anterior colporrhaphy with reefing of the bladder, posterior colporrhaphy, suture of the levators and perineal plastic surgery. Only after all these procedures is the collifixation undertaken. The attachment is made to the fascia of the rectus muscle, together with ventrofixation of the round ligaments. In women beyond the childbearing age a broad ventrofixation of the body of the uterus is done in addition. The author believes that with this technic the best results are obtainable. With it the collifixation is reduced to a less serious procedure and it takes place alongside of the other parts of the operation as a partial operation.

Marriage, Pregnancy, Parturition, and Tuberculosis.—E. Ward (*Lancet,* September 15, 1923) finds that a tuberculous woman loses nothing by marriage alone. It is unlikely to affect her either way; if it does affect her it is more than twice as likely to improve her condition as to cause deterioration. Pregnancy and parturition are likely to make her worse; there is, however, only a fifty per cent. chance of this against a nineteen per cent. chance of improvement. But the children are seven times as likely to be tuberculous as those of healthy people. Patients who ask for advice about marriage will not take it unless it coincides with their wishes. The best way to prevent an undesirable marriage is to procrastinate. Each case must, of course, be considered on its merits from all points of view. The chief risk is to the children, and this should be emphasized. A woman of marriageable age with major tuberculosis should not bear children. To counterbalance the loss of gratification of the maternal instinct must also be placed the risks of deterioration to the patient. In regard to lactation, if milk is available it is wise for a tuberculous woman to breast-feed the child for six weeks certainly, longer in many cases, *but* never longer than eight months, and always with precautions if she is infective.

GENITOURINARY TRACT

Alkali Deficit in Nephritis.—John R. Marrack (*Lancet,* September 22, 1923) states that the most satisfactory method of detecting the presence of alkali deficit is the estimation of the bicarbonate content of the plasma, preferably together with the hydrogen ion concentration of the plasma. This gives direct information as to the actual balance of acids and bases in the blood, and indirectly in the other body fluids also. The results of plasma bicarbonate determination are usually expressed as the number of c.c. of carbon dioxide that the bicarbonate in one hundred c.c. of plasma would give off on treatment with excess of acid. The normal figures for plasma bicarbonate range between fifty-five and seventy. Cases of alkali deficit may be classified into mild with figures between thirty-five and forty-four, and severe under thirty-five.

The amount of bicarbonate given by mouth should not be more than is required to bring the plasma bicarbonate back to normal (forty). The amount required to do this can be calculated from the formula $G=W\ (40-x)\ 2$, where x is the patient's plasma bicarbonate before administration, W his weight in kilograms, and G the number of grains of sodium bicarbonate required. With this should be given $\frac{G}{20}$ grains of potassium bicarbonate, and calcium lactate. Having brought the plasma bicarbonate up to this level, the production of acid should be kept as low as possible by feeding the patient on a mainly carbohydrate diet and moderate doses of sodium bicarbonate, e. g., twenty grains three times daily.

Interstitial Cells and Seminal Epithelium.—Viktor Patzelt (*Wiener klinische Wochenschrift,* August 9, 1923) comes to the conclusion that there are important metabolic relationships between the seminal epithelium and the interstitial cells. The question as to what extent these structures are engaged in an immediate exchange of substances with each other is still undecided. At any rate, the seminal epithelium can resorb not only albuminous substances and carbohydrates necessary for its metabolism but it can also resorb lipoids directly from the adjacent bloodvessels, but nevertheless a part of these lipoids could originate in the interstitial cells. These undoubterly are engaged in an active exchange of substances, as no other theory could be assumed for the places where they are at a greater distance from the seminiferous tubules. Whether they can resorb lipoids immediately from them during the regression of the seminal epithelium, is just as questionable as the transformation of these from the interstitial cells into the seminal epithelium during the process of spermatogenesis. Both of these structures stand in a compensatory relationship toward each other as regards the body, inasmuch as the interstitial cells store up lipoids when spermiogenesis is not going on and give them off when it is going on. This compensatory activity of the interstitial cells is also of great significance to the regeneration of the seminal epithelium after an injury, and especially the storing up of the lipoids so very important for spermatogenesis. Consequently, the interstitial cells can by no means represent merely a filling tissue and they can hardly be considered as a protective arrangement for the very sensitive seminal epithelium in a functionating testicle as a result of its relatively slight development and the immediate contact between seminiferous tubules and bloodvessels, even though they, as in vital staining, can also resorb toxic substances from the blood. There are also no grounds for the assumption of a sexually specific hormone in the interstitial cells, whereas a sexually specific influence on the body is undoubtedly associated with the activity of the seminal epithelium. But when this is markedly diminished or in abeyance, then the testicle is maintained as a total organ in regard to the body as a result of the compensatory increased metabolism of the interstitial cells, even if in a diminished degree, so that signs of castration do not appear at first. The function of the interstitial cells seems to be associated with the fact that the seminal epithelium is present, even though in an indifferent state, and during puberty has achieved complete maturity at least in certain areas and has thus achieved the maturity of the body.

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Medicolegal Notes.

MEDICAL EXPERT EVIDENCE IN MALPRACTICE CASES

In an action for malpractice, the Kansas Supreme Court, Saylor v. Brady, 220 Pac., 1047, held that a demurrer to the plaintiff's evidence was properly sustained because "the plaintiff offered no expert evidence to show negligence. It is the general rule in malpractice cases that the negligence in the treatment which it is claimed caused the injury must be shown by physicians or by medical witnesses called as experts."

The claim of negligence here made was that in performing a surgical operation upon plaintiff, the defendant made the incision too long and in an improper place; that he used defective catgut in sewing up the wound, and failed to use proper means to cause the wound to heal; and that he failed to give proper advice and proper treatment after the operation. "Obviously," the court said, "to entitle plaintiff to recover it was necessary for her to offer testimony by some witness who knew something of medical science, and that means a physician or surgeon, tending to show what length of incision was proper in the operation performed, where it should be made, what were the proper means to use to cause the wound to heal, or what constituted proper advice or treatment after the operation."

Plaintiff's medical witness testified that he could form no opinion upon the proper treatment in plaintiff's case without knowing the circumstances of the case, such as the nature of the operation performed by defendant upon her, the condition of the wound, and the condition of the patient. These were not stated to him in a hypothetical question, and his judgment asked thereon, nor was the negligence of the defendant shown in any way by any witness familiar with medical science.

In Pettigrew v. Lewis, 46 Kan., 78, 81, 26 Pac. 458, it was said, "Cases may arise where there is such gross negligence and want of skill in performing an operation as to dispense with the testimony of professional witnesses." If in performing a surgical operation, a metal spring twelve inches long were sewed up in the abdomen (Wharton v. Warner, 75 Wash., 470, 135 Pac. 235), or a jawbone broken in pulling a tooth was given no treatment at all (Eichholz v. Poe (Mo.), 217 S. W. 282) perhaps, the court said, medical evidence would not be necessary to show negligence, but no such situation was presented here.

The same difficulty was found as to the treatment after the operation. There was no evidence by any one competent to testify on the subject as to the period of time visits should have been continued in the condition in which plaintiff then was, nor what advice was proper to give.

The most favorable aspect in which the court could view the plaintiff's evidence was to say that some of it tended to show an unsatisfactory result. There was evidence tending to show an imperfect healing of the wound, resulting in a surgical hernia, which would perhaps necessitate a secondary operation to relieve the plaintiff; but there was no evidence that such an unsatisfactory result could have been prevented by different treatment than that given, nor that the secondary operation would have been advisable any time soon after the major operation. In addition to that, the mere showing of an unsatisfactory or poor result is not sufficient to make a physician liable in damages.

NATUROPATHS IN CALIFORNIA

Under a certificate to practise naturopathy under the California Medical Practice Act, the California courts hold, Millsap v. Alderson (Cal.), 219 Pac. 469, that one is not entitled to engage in the general practice of medicine and surgery, and that the board of medical examiners, having upon competent evidence found that he had so engaged, was justified in revoking his certificate. The materia medica of the naturopath, under the statute, are "light, air, water, clay, heat, rest, diet, herbs, electricity, massage, Swedish movements, suggestive therapeutics, chiropractic, magnetism, physical and mental culture, etc. While the naturopath is limited in his treatment to his system, the physician or surgeon is authorized to use all methods.

MALPRACTICE IN ILLINOIS AND MISSOURI

An action against a surgeon for malpractice in leaving a sponge in a patient during an operation, which was barred in Illinois, where the operation was performed, was held barred in Missouri, where the action was brought, under Missouri Rev. St. 1919, Section 1324, providing that when a cause of action has been barred by the laws of the State in which it originated, the bar should be a complete defense to any action thereon in the Missouri courts. Brown v. Grinstead (Mo. App.), 252 S. W., 973.

PROPER TREATMENT A QUESTION FOR MEDICAL EXPERTS

The relation between a physician or surgeon and his patient, implied by law, is that he possesses that reasonable degree of learning and skill ordinarily possessed by members of his profession and of his school of medicine in the community where he practises, or similar communities, having due regard for the advance in medical or surgical science at the time, and that he will use such learning and skill in the treatment of the patient with ordinary care and diligence. This general principle has been definitely settled by repeated adjudication.

In case of doubt as to which of two or more courses is to be pursued, the Kansas Supreme Court, James v. Grigsby, 220 Pac. 267, holds that he must use his best judgment. He does not guarantee good results, and no civil liability arises merely from bad results, nor if bad results are due to some cause other than his treatment; but where he fails to use ordinary care and diligence, and injury results therefrom, he is liable for the injury in a civil action for damages. These principles apply to diagnosis as well as to after treatment.

What is the proper treatment to be used in a particular case is a medical question, to be testified to by physicians as expert witnesses. Laymen, even jurors and courts, are not permitted to say what is the proper treatment for a disease, or how a specific surgical operation should be handled. Results, if so pronounced as to be apparent, may be testified to by any one. And where negligence in the treatment is shown by medical witnesses, and the evidence shows a bad result, it is the province of the jury to say whether the result was caused by the negligence.

In this case, of malpractice in setting an oblique fracture of the leg above the knee, the chief question discussed on appeal was whether the defendant, when the patient was taken to a hospital where there was an x ray machine, was obligated to take an x ray picture of the leg unless the plaintiff requested it and tendered the cost. The evidence was that it was the proper treatment to take the x ray picture if facilities were available. The court held that it was therefore the defendant's duty to take it without request, and under the evidence of both plaintiff and defendant the question of pay did not enter into it. The court doubted whether plaintiff would be required to pay in advance for the use of an x ray, any more than he would for the use of any surgical instruments or appliances or for bandages, but that did not require to be decided.

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The Endocrine Treatment of Amenorrhea and Menorrhagia

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During the last twenty-five years vast strides have been made in surgery but at the present time it looks as if surgery is at a standstill. At or about the same time that surgery started to develop, Brown Séquard was experimenting with orchitic extract. Now the reason why organotherapy has not made the same advances as surgery is because, in this particular branch of science, the handmaidens are biochemistry and physiology. To be able to undertake endocrinology the worker must have a full knowledge of these two sciences and as the progress of modern science goes on it is becoming almost impossible to keep these three subjects in touch with one another.

In order to approach the subject of this paper we must first of all lay down some rules for the guidance of the reader.

In the male the question of the study of organotherapy is far more simple than it is in the female, and the reason for this is as follows: In the male we are dealing with a complete unit. In the female, on the other hand, we have a mechanism so constructed that it can reproduce a facsimile of its species when an ovum is fertilized. In order that the body shall be able to produce the necessary secretions for the developing embryo it is absolutely necessary that the endocrine organs shall be able to react at once to the necessary stimuli. This is the real reason why the female endocrine glands are more unstable than the male.

To put this in another way, one can say that the endocrine glands are factories which are so arranged that all their powers of being able to manufacture goods can be mobilized at the earliest possible moment. The other point is that the glands never bear a constant ratio one to another. By this I mean, that if a child starts its life as a hypothyroid, it is quite likely that when he reaches the age of twenty-five to thirty his thyroid gland may start to work properly. Owing to the fact that the child was a hypothyroid, he will give a history of bedwetting, cord healing late, also delay in cutting his teeth and walking. As an adult he will also show signs of hypothyroidism, i. e., loss of outer third of eye brows, lower teeth crowded together, caries of teeth. Also because he is a hypothyroid the anterior pituitary will be oversecreting. This will give rise to a large sella turcica and also increased growth with overdevelopment of the gonads.

Now it is these facts which make endocrinology such a difficult and fascinating study. From the study of some hundreds of cases of endocrine derangement, the following facts have presented themselves. As the major part of the work rests on the theory of Gaskell's origin of the invertebrates, perhaps it would not be out of place to mention it briefly here.

In 1908, Walter H. Gaskell published a book entitled *The Origin of the Vertebrates*. I believe at the present moment that some zoologists decline to have anything to do with this theory. This may be right or wrong, the only thing that I can say is that the study of his book has helped me to unravel some of the problems of organotherapy. He traces the origin of vertebrates from a member of the paleostracian group and says that in the ammocetes we have evidence that the seventh nerve represents the foremost of the mesosomatic group of nerves and it supplied two segments which have united one with the other. The posterior segment which is the hyoid is a branched segment of the same character as those which are supplied by the vagus and glossopharyngeal nerves. The anterior segment forms the thyroid and differs from the rest in that instead of possessing branchiæ it carries the thyroid gland with its two ciliated grooves. From this we must assume that the branchial appendages became fused in the midlines to form a single median organ—the thyroid gland.

Now in Limulus the appendages are all fused together to form the operculum which on its posterior surface carries the genital duct one on either side. In scorpio the operculum is not free but forms part of the body wall but here also are the orifices of the genital ducts, these duct however open into a common chamber (vagina or uterus) which extends the whole breadth of the operculum and is limited to that segment alone. So much for the thyroid gland.

The anterior pituitary is developed as follows: The excretory glands of the Phyllopoda, known as the shell glands, which exist also in the Trilobite, are present in the mesostromata as the coxal gland. Now in Limulus these glands are connected to the coxæ of the 2, 3, 4, and 5 locomotor appendages. When these appendages became reduced in size and became purely tactile they were compressed and became concentrated round the mouth region, forming the en-

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dognaths of the merostromata. As a necessary consequence of the concentration of the coxæ of the endognaths, the coxal glands also became concentrated and took up a situation close against the pharynx, when the old mouth closed and the pharynx became the saccus vasculosus and the coxal glands became the anterior pituitary, thus giving the reason why there is such a close connection between the pituitary and the infundibular region.

Whatever was the condition of the digestive tracts at the transitional stage between the arthropods and the vertebrates, the original mouth, opening at the base of the olfactory tube, was closed. The method of closure was exceedingly simple. The membrane cranium was in process of formation by the extension of the plastra laterally and dorsally, a slight growth of the same tissue in the region of the mouth would suffice to close it, and then separate the infundibulum from the olfactory tube. As evidence that such was the method of closure, it is instructive to see how in Ammocetes the glandular tissue of the pituitary body is embedded in and mixed up with the tissue of the cranial wall. Now the termination of the nasal tube which is the pars intermedia of the pituitary becomes embedded in the anterior pituitary or remnant of the coxal glands.

The posterior pituitary arises in quite another manner. In the invertebrates the brain is represented by the preoral and postoral ganglia connected by the circumoral commissure. This is the remains of the primitive brain, the rest of the central nervous system was represented by a chain of ganglia which ran the entire length of the body of the animal and then sent branches to the chromaffin system.

The other part of the central nervous system was represented by the ten cranial nerves. In this way the autonomic system arose. As soon as the need for a large brain with intellect was required, the preoral and postoral ganglia became joined together to form the posterior pituitary and it still retained its connection with the sympathetic cells by its chain of ganglia which became embedded in the spinal cord. This theory if true helps to place Sajous's idea of the posterior pituitary and its functions on a still firmer base.

Let us now recapitulate what has been said before and we find that:

I. The anterior pituitary is developed from the coxal glands.
II. The pars intermedia is the remains of the olfactory tube.
III. The posterior pituitary is the remains of the old invertebrate central nervous system linked by a chain of ganglia to the sympathetic.

These are all close to the mouth region as also are the thyroid, parathyroid, thymus and gonads, so that we see that the following glands were all closely connected to the mouth: Anterior pituitary, pars intermedia, postpituitary, thyroid, thymus, parathyroids, and gonads.

It is therefore logical to conclude that all these glands are still closely connected one with the other. I must apologize for taking up so much space with the discussion of morphology but I am of the opinion that the whole basis of organotherapy rests on these statements.

The next point to be discussed is the ovary. For some time past (1) I have divided the ovary into three parts for the purpose of treatment.

First, the ova. These are shed to my mind seven to ten days before an expected period—my proof for this is that if my theory as regards the corpus luteum is right, i. e., that it inhibits more than one ovulation taking place at a time, pain in the breasts signifies that an ovum or ova have been shed.

Second, the stroma. This controls the development of the uterus and also determines the activity of this organ as regards preparation for the ovum if it becomes fertilized. If on the other hand fertilization does not take place menstruation makes its appearance.

Third, the interstitial cells. These cells have only to do with the secondary characteristics of sex.

I now propose to take each gland separately and describe the rôle which it plays in the process of menstruation.

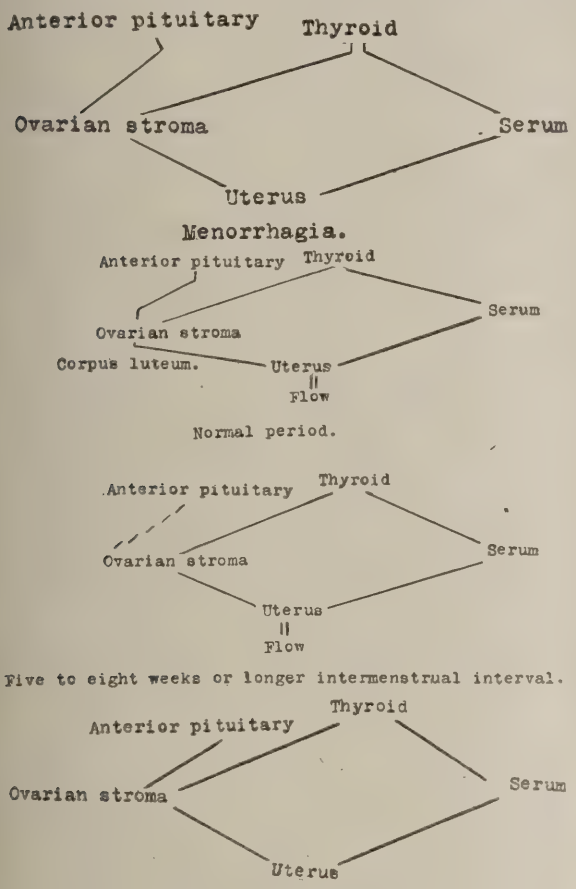
THE ANTERIOR PITUITARY

The activity of this gland is more complex than one would suppose. Personally, I believe that in the most primitive of invertebrates it was united to the thyroid gland. Some work which I have recently done seems to point to this, for if the secretion of the anterior pituitary tends to fail the thyroid gland tries to make good this deficiency; in other words, it takes on a dualistic function. In nearly all my cases of hypopituitarism of the anterior pituitary, I have found a blood pressure of 140-180 and a pulse rate of 80-120. From observations whcih I hope to publish later it would appear that this increase of pulse rate is due to the thyroid trying to make good the failing secretion of the anterior pituitary. In this type of cases, namely hypopituitarism of the anterior lobe, I have observed an increase of the basal metabolic rate and also an increase in the percentage of blood sugar which in some cases was as high as 0.15 per cent. It has also something to do with the mechanism of the skeletal muscles as all my cases had well developed muscles. This is not a deposit of fat as some observers would have us believe.

The anterior pituitary also has to do with the metabolism of sugar in the blood, lack of anterior pituitary secretion causing the percentage of blood sugar to rise. The exact opposite is found in hypothyroidism in this case the percentage of sugar may be as low as 0.07 per cent.

The anterior pituitary also determines growth as it controls the metabolism of the bones at the epiphyseal junctions. Hypopituitarism of the anterior lobe of the pituitary causes an early closure of the epiphysis and so stunted growth; hyperpituitarism of the anterior lobe causes late closure of epiphysis and thus excessive growth. It also stimulates the ovarian stroma, and so reflexly the uterus and mammæ. This is brought about in the following manner. The ovum is shed seven to ten days before the expected period. As soon as the ovum is shed the corpus luteum is formed to prevent further ovulation and at the same time the stroma causes the uterus and mammæ to be engorged with blood. The thyroid is also caused to become more active, owing to the fact that metabolism is increased. The anterior pituitary not only reinforces the thyroid secretion but it also acts on the ovarian stroma and helps in the rhythm of the periods.

For the period to start at puberty the following events must take place. The control which the thymus has over the ovarian stroma must be inhibited. The anterior pituitary together with the thyroid must be working in harmony one with the other. The following diagrams help to explain this.



AMENORRHEA OF PUBERTY

This as will be seen by the foregoing diagrams will depend on three factors. 1. Lack of ovarian stroma; 2, lack of thyroid secretion; 3, lack of anterior pituitary. Now in my opinion a person who is suffering from lack of ovarian stroma also suffers from lack of ova and also interstitial cells. This is the pure eunuchoid type. These patients are tall for their age, the legs are longer than the body, with tapering extremities, the breasts are rudimentary, pubic and axillary hairs are absent and there is lack of fat over the buttocks. I have personally seen only two patients whom one could classify into this group.

Case I.—Miss C., aged fifteen years and eight months. She was first seen in May, 1922; complained of never having had a period. She had cut her first tooth at eleven months, walked at fourteen months, had never wet the bed. (Thyroid mechanism was good.) The patient's height was five feet six inches. Hands and feet long and tapering, legs longer than the body, breasts not developed, axillary and pubic hairs absent, very thin. Blood pressure 90, pulse 74, basal metabolic rate —6. She was treated with ovarian substance (five grams) without corpus luteum. At the end of nine months her periods were regular. The response of this patient to ovarian substance is more an exception than a rule.

Case II.—This patient was aged sixteen, height six feet two inches, weight ninety-eight pounds. She was also suffering from pulmonary tuberculosis and died two months later. Ovarian substance was tried here also but as I expected, there was no result.

LACK OF THYROID SECRETION

Cases of this type are common. Lack of thyroid secretion always causes the period to appear at the age of sixteen to seventeen. Hyperthyroidism on the other hand causes the period to appear at thirteen or even earlier, provided that the other glands are working normally. Engelbach says that the hypothyroid girl menstruates at a much earlier period than the normal. The following is a typical case.

Case III.—Miss B., aged twenty-three, first seen October 3, 1921. Complained of amenorrhea since July 27, 1921, first period at fifteen; five days, twenty-eight day interval, two napkins each day. There had been no dysmenorrhea, quite regular till July, 1920. Her next period appeared November 20, 1920. It lasted five days. She used two napkins each day. July 27, 1921, seven days, one napkin only.

She was a well developed young woman. There was loss of outer third of eyebrows, lower teeth crowded together, skin dry. Mother had suffered from myxedema. The blood pressure was 120, pulse 68. The patient was given hormotone with postpituitary, one tablet t. i. d. and thyroid one quarter gram. The pulse rate rose to 74. December 25, 1921, her period lasted five days with two napkins each day. January 23, 1922, period, five days, two napkins each day. February 19, 1922, period five days, two napkins each day.

The patient was kept on hormotone and thyroid one quarter gram for another three months and up to December, 1923, has never missed a period.

I should like to remark here that I am greatly in favor of using a pluriglandular compound such as hormotone whenever it is possible as I find that they help to reinforce the action of single gland substances. The only rule that must be borne in mind with this is that thyroid substance must never be given to a patient who possesses an unstable thyroid as an unstable thyroid is one of the causes of dysmenorrhea.

LACK OF ANTERIOR PITUITARY SECRETION

These cases are likewise fairly common. The patient nearly always starts her periods late and there is also periods of amenorrhea.

Case IV.—Miss S., aged fifteen. She was first seen June 1, 1923, complained of amenorrhea. Her first period was February, 1923, five days, two napkins each day. Second period March, 1923, five days, two napkins each day. She had been slowly putting on weight. Her blood pressure was 80, pulse 72. She was given entire pituitary, one half gram t. i. d. Her period came June 14th, six days, three napkins each day, July 24th, period four days, two napkins each day. Her blood pressure was 110, pulse 72. The patient was advised to take hormotone for three months to stabilize the endocrine glands.

In order to help in the treatment of amenorrhea I have thought it advisable to insert a table of differential diagrams.

AMENORRHEA DIFFERENTIAL DIAGRAMS

	Hypoorarism	*Hypothyroid*	*Hypoanterior Pituitary*
Eyebrows	Normal	Loss of outer third	Normal
Teeth	Normal	Lower crowded together	Space between teeth
Height	Excessive	Medium	Tall
Muscles.....	Poorly developed	Flabby	Well developed
Span	Greater than height	Equal to height	Greater than height
Fat	Very thin	Plump	Plump
Breasts	Rudimentary	Normal	Normal
Hips	Large pelvis	Normal female	Normal female
First period...	Absent	Hypo, late. 16 Hyper, early. 13	Late. 16-18
Loss	Absent	Hypo, scanty Hyper, excessive	Scanty Green in color
Interval	Absent	Four weeks—months	four weeks—months
Blood Pressure.	90-110	100-120	110-130
Pulse rate.....	72-80	60-70	80-90
Blood sugar...	.09	.07-.06	.1-.14
Metabolic rate.	?	−4 to −10	−4 to −10

There is still one type of case which I would like to mention.

Case V.—Mrs. W., aged twenty-nine. First seen June 12, 1922. Complained of amenorrhea all her life. Married four years. She had three sisters all normal. She was a well developed young woman, height five feet six inches. Her weight was 132 pounds. Her teeth showed spaces between them. Her breasts were well developed, pubic and axillary hairs were present. Her blood pressure was 110, pulse 80. Both ovaries were felt and appeared normal. The uterus was very small, size one by three quarters, freely movable. Says she felt libido at times also felt discomfort each month. Her breasts felt tight. There was also pain behind the eyes. In this case we have a typical hypoanterior pituitary condition. The ovaries were normal as was the ova and also the interstitial cells as she had the secondary sex characteristics well marked. Stroma was not active owing to lack of anterior pituitary.

The patient was placed on large doses of anterior pituitary owing to its action on the stroma. Unfortunately this patient was lost sight of as she would not persevere with the treatment.

MENSTRUATION

In a paper of this description perhaps it would be best to give a detailed description of what I believe takes place.

An ovum is shed seven to ten days before the expected period. The corpus luteum is then formed to prevent other ova from being shed. The ovarian stroma then stimulates the uterus and mammæ. The uterus for descriptive purposes can be looked on as a secreting gland which nourishes the ovum. The anterior pituitary fulfills a dualistic function: It stimulates the ovarian stroma and it helps the thyroid gland with the excessive metabolism.

The increased metabolism of the uterus causes the thyroid to swell and become active.

If the ovum becomes fertilized the uterus becomes so engorged with blood that the glands of endometrium start to excrete, the cavity of the uterus becomes disturbed and at a certain point it starts to contract reflexly.

If the ovum becomes fertilized the excessive secretion of the thyroid holds the posterior pituitary in check. At full time the thyroid is unable to supply enough thyroid secretion to a, the fetus, or b, to keep the posterior pituitary in check. The posterior pituitary then stimulates all the chromaffin system and labor comes on.

The following facts are of interest. At or before an expected period the blood pressure is 100 and rises to 120. The pulse rate is 80 and rises to 88.

If the patient is pregnant the blood pressure is about 100, while the pulse rate runs up to 90 or 100. This rise of pulse rate with drop of blood pressure is always constant for pregnancy.

The same thing happens when labor comes on, blood pressure 120, pulse 80, the labor pains are strong and good.

If the blood pressure is 90 to 100 and the pulse rate is 100, labor pains are bad, the labor will be long and is usually followed by postpartum hemorrhage. In the first type of labor I always give hormotone to support all the endocrine glands. In the latter I give large doses of posterior pituitary to inhibit the thyroid secretion. This always makes the pains better and avoids postpartum hemorrhage.

MENORRHAGIA

The chief cause of this complaint from adolescence to the menopause is over active ovaries plus an irritable or over active thyroid. The treatment here is always large doses of posterior pituitary to control the thyroid, these doses must be continued until the pulse rate at the period is 80. The anterior pituitary must also be able to keep pace with the thyroid secretion. Anterior pituitary, plus; thyroid, plus; ovarian stroma, plus—menorrhagia. Anterior pituitary, normal (pain behind eyes); thyroid, plus; ovarian stroma, plus—flow normal. Anterior pituitary, minus; thyroid, normal; ovarian stroma, minus—flow scanty, green in color.

MENORRHAGIA AT THE MENOPAUSE

One has first of all to exclude cases of fibroids, polypus, carcinoma of cervix and body. Having done this there still remains a good number of cases which may be classified under one group as chronic metritis.

Fletcher Shaw (5) divides chronic metritis into three groups histologically. Chronic metritis, chronic subinvolution, hypertrophy.

Group I is found after puerperal sepsis. Group II is caused by a chronic septic condition and the result is excess of elastic and fibrous tissue throughout the uterine walls. Group III. The marked feature here is a great thickening of the endometrium. Now I am of the opinion that the most common cause of chronic metritis is a bacterial infection of the uterus. I have had a fair number of cases coming to me complaining of a discharge. Now on preparing a swab from the cervix, one always obtains a collection of bacteria like the following.

Case VI.—Miss E., aged twenty-seven. First seen June 10, 1923, leucorrhea for two years. A swab from the cervix showed staphylococci and streptococci. Vaccine were prepared from the swab and given each week. In October, 1923, the vaccine was stopped and the patient was free from all signs of a discharge even after the period.

The patients were not allowed to douche themselves while undergoing this treatmnt and were ordered hormotone to improve and tone up the general condition of the body.

The theory that I put forward at present is that the patient who has leucorrhea at the age of thirty never loses it and owing to the chronic infection which is always there the uterus at or about the

menopause becomes chronically subinvoluted and this gives rise to the hemorrhage.

Now it is a well known fact that if the child suckles the breast the uterus will involute quickly, owing to this fact I have placed all my patients on mammary tablet five gr. Six tablets each day. This was always done after I had excluded fibroids, polypus, carcinoma of cervix and body, also a high blood pressure due to hypoanterior pituitary and hyperthyroid.

On these lines my results with mammary substance have been very successful.

SUMMARY AND CONCLUSIONS

1. The study and treatment of endocrinology is easier in the male than the female.

2. The secretion of the glands may alter at or after puberty, i. e., hypothyroid may become a hyperthyroid but still retain the signs of a hypothyroid.

3. Hypothyroid child has a large sella turcica as an adult.

4. Gaskell's theory of the origin of the invertebrates discussed and its relation to the endocrine glands and the autonomic system.

5. Anterior pituitary developed from the coxal glands.

6. Pars intermedia from the olfactory tube.

7. Posterior pituitary is the remains of the preoral and postoral ganglia and still remains linked up to the chromaffin system.

8. From Gaskell's theory it is deduced that the anterior pituitary, posterior pituitary, thyroid, thymus, parathyroid and gonads are all closely related.

9. The ovary consists of three separate parts, a, the ova; b, the stroma which controls the uterus and is also acted on by the anterior pituitary; c, the interstitial cells which have to do with the secondary sex characteristics.

10. Function of anterior pituitary. a. It helps the thyroid secretion. b. Acts on the ovarian stroma. c. Is related to the storage of potassium in the muscles. d. Has to do with the percentage of sugar in the blood. e. Also with growth.

11. Diagram to show action of anterior pituitary, thyroid and ovarian stroma.

12. Causes of amenorrhea at puberty with the three types. 1. Gonads. 2. Hypoanterior pituitary. 3. Hypothyroid.

13. Treatment outlined with examples for giving ovarian, anterior pituitary and thyroid extract.

14. Table of differential diagnosis.

15. The process of menstruation described.

16. Relation of blood pressure to pulse rate at and before the period. Blood pressure 100 rises to 120, pulse 80 rises to 88. If patient becomes pregnant, blood pressure falls or remains at 100 while the pulse rate rises.

17. During pregnancy the thyroid inhibits the posterior pituitary.

18. When labor starts if the blood pressure is high and pulse low, the pains will be strong. If the blood pressure is low and the pulse rate quick the labor will be slow with a risk of postpartum hemorrhage. If posterior pituitary be given by the mouth the labor pains will improve and the pulse rate fall.

19. The chief cause of menorrhagia is an irritable or overworking thyroid. This is controlled by giving posterior pituitary. Examples of this.

20. Bleeding at the menopause, when fibroids, polypus, cancer of the cervix and body have been excluded, is caused by chronic metritis.

21. Three types of this. a, Chronic metritis; b, chronic subinvolution; c, hypertrophy.

22. Theory put forward that this is due to a bacterial infection while patient is young.

23. Treatment of leucorrhea by autogenous vaccines, with examples of cases.

24. Mammary substance advocated for menorrhagia at the menopause on the grounds that the suckling child helps the uterus to involute.

13 VENNER ROAD, SYDENHAM.

Slight Protracted Fever of Obscure Origin*

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At the U. S. Veterans' Hospital No. 60, Oteen, N. C., there are or have been in the recent past at least a dozen patients out of seven hundred and fifty to eight hundred in whom a slight degree of oral fever has persisted while in the hospital lasting from several months to over a year, without any adequate explanation being found to account for it. As a result problems have arisen that are not only interesting from a scientific viewpoint but which also have a great practical significance for the patients and for the Government.

In estimating the temperatures in these cases the maximum daily temperatures covering usually one hundred or more consecutive days have been used and are reported in actual figures and percentages for various fractions of a degree of temperature.

CASE I.—This was a case of war neurosis in a typical male patient, aged twenty-eight, who was in the hospital three and one half months. Ninety-six consecutive evening temperatures showed:

37 C. (98.6 F.)	12	12.5 per cent.
37⅕ C. (99 F.)	26	27 per cent.
37⅖ C. (99.3 F.)	29	30.2 per cent.
37⅗ C. (99.7 F.)	14	14.5 per cent.
37⅘ C. (100 F.)	15	15.5 per cent.
	96	100 per cent. (approximately)

CASE II.—A typical female patient, aged twenty-five, who had been in the hospital six months. Her

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chief complaint was marked fatigability, being unwilling to walk over twenty-five minutes a day. She was subject to vertigo and a rapid pulse, was five to ten pounds underweight; refused neuropsychiatric and pelvic examinations. One hundred consecutive evening temperatures:

37 C. (98.6 F.)	1 per cent.
37⅕ C. (99 F.)	1 per cent.
37⅖ C. (99.3 F.)	28 per cent.
37⅗ C. (99.7 F.)	50 per cent.
37⅘ C. (100 F.)	18 per cent.
38 C. (100.4 F.)	2 per cent.

The majority of these temperatures were taken about 6 p. m. They had not been materially affected by meals, by rest in bed, or by ordinary walking. Malingering, which is an easy practice among the adept and with which the hospital had some experience, was excluded as nearly as possible in these cases. The thermometers had been tested, and the patients had not been restricted to a single thermometer. The time the thermometers remained in the mouth had been adequate.

The cases under consideration were rated as febrile because the patients had had an elevation of temperature exceeding the upper limits of normal temperature as given by authorities in general. According to the National Tuberculosis Association diagnostic standards: "A temperature which persistently runs over 99.4° when taken at least four times a day over a period of one week (by mouth five minutes) should be considered of significance and to constitute fever." C. L. Minor states that a persistent afternoon temperature at rest above 99.2° is very suspicious, and a temperature of 99.6° diagnostic of tuberculosis, if other things are excluded. L. Brown considers fever to be present in males with a temperature over 99°, and in females over 99.6° A. K. Krause states that under ordinary conditions of life, and in the absence of unusual mental or physical effort, few normal persons have a temperature over 98°.

It may be well to emphasize here that a given temperature elevation may have great significance in a case already established as definitely tuberculous, and the interpretation of such a temperature and its bearing on treatment may present a different problem from that of a similar temperature in a case long observed showing no demonstrable disease. The thermometer as a guide to treatment of tuberculosis and as an aid in diagnosis has different functions to perform.

In order to exclude tuberculosis in these cases full use was made of all available methods at the hospital. Careful histories and close scrutiny of the symptoms while the patients were under observation were made to determine whether the data obtainable in this way could be traced to the respiratory organs. Routine examinations were made of the chest (physical and radiological), and also routine general physical examinations. Routine examinations were also made of the sputum, urine, feces, blood (including differential counts and Wassermann tests), of the blood pressure and of the mouth (especially the teeth), the upper respiratory tract, the ears, and the eyes. If many months had elapsed it was customary to repeat all routine examinations. Besides the routine investigations advantage was frequently taken, even in the absence of any particular indications, of special examinations, for example by the surgeon to eliminate any surgical, genitourinary, rectal or other condition, or of a neuropsychiatric examination by a specialist in this line, or of special gastroenterological studies, and also of basal metabolism and other tests. A very helpful feature in the investigation of these cases was the protracted period during which observation and study were carried on while the patients were in the hospital. Unfortunately most of the female patients refused pelvic examinations, and it is of interest that the proportion of these patients with inexplicable fever far exceeded that of the male patients.

Regarding the chest examinations of this group only those cases are included which were pronounced negative by two or more experienced clinicians, usually on more than one examination, and which were reported as negative or doubtful by one or more experienced radiologists, who usually had the advantage of comparative readings.

The manifestations in this group did not cover a wide range. Most of the patients complained of feeling poorly or sick and were manifestly not well. Failure to improve with continued hospital treatment was striking in several instances. Symptoms were not traceable directly to the lungs or pleura, although some of the patients had chest pains and were subject to dyspnea on slight provocation. The chief complaint in most of the cases, and the commonest complaint, was fatigability in some form. This symptom was especially marked in the female patients. A rapid or excitable pulse was common, and also some degree of nervousness. The weight was frequently slightly subnormal, even with hospital care. General pains occurred in some of the cases but were not a prominent feature. Distinct feverishness was complained of in one case. The mental manifestations revealed no distinct psychosis, but several patients had peculiar mental attitudes, partly the result of prolonged hospitalization, of compensation problems or war neuroses. Gastrointestinal symptoms played a minor rôle.

The problem of diagnosing these fever cases that give no manifestations of any definite disease is similar to that involved in any indefinite cases whether fever be present or not. In other words, the problem is concerned with the broad problem of diagnosing incipient or minimal disease in general. In attempting to determine the cause of such obscure fever four lines of investigation will be pursued. First, is the fever due to some cryptic infection other than tuberculosis? Secondly, is it due to tuberculosis of the socalled occult type? Thirdly, is it due to some disease other than infectious? Fourthly, is it possible that any of these patients are exhibiting what is for them a normal oral temperature?

Every effort, as has been stated, has been made to exclude cryptic infections. It is realized that such infections may produce no symptoms, or that such symptoms as are produced may be of a general toxic nature, and that if they cause local symptoms these symptoms may be distant from the focus of infection. The indications are clear then to search all available areas for possible sources of hidden infec-

tion. Even then the implicated area may be beyond our reach.

While giving all due consideration to cryptic focal infections as a possible source of fever of prolonged duration, it is interesting how little evidence there is that such foci frequently maintain a daily elevation of temperature for months or years in the absence of distinct localizing symptoms, for example, from an arthritis, or in the absence of acute exacerbations. In the many excellent articles dealing with focal infections the temperature receives scant treatment in comparison with other symptoms. In the average case with chronically infected tonsils or teeth or other tissues and with protracted constitutional symptoms, clinical records are ordinarily lacking that would show a daily temperature record properly taken with the thermometer left in the mouth for five or ten minutes, this record being maintained for months or years, and exhibiting a distinct febrile elevation. There is a general impression that many focal infections are fever free except during acute exacerbations. In the cases at Oteen in which a manifest source of focal infection was demonstrated and removed, the temperature had not regularly returned to normal.

Gastrointestinal examinations, especially with the x ray, were the rule in these cases, regardless of any special indications, because of the large area liable to cryptic infection. One patient, who had been in the hospital for some time with no condition found except chronic appendicitis, had had constantly a slight fairly uniform fever comparable to that described in the present group of cases. Another patient, with the only condition found a gastroenteroptosis of moderate degree, had been subject to a similar fever for about one year. Old chronic prostatic infections were found in cases otherwise negative, some with, some without fever. Occasionally a patient was treated for diagnostic purposes with antiluetic treatment in the absence of a positive Wassermann, and with prolonged quinine administration in the absence of positive blood findings, in both instances without noticeable results. There was no eosinophilia to suggest trichinosis.

A second source of fever in these obscure cases that suggests itself is a hidden or occult tuberculosis in the chest or elsewhere, yielding no definite manifestation. Can these cases represent a period in the development of tuberculosis between the time of infection and manifest disease? If we are really dealing with such a condition, it is a rare opportunity that we naturally want to make the best of, to the patient's great and lasting good. On the other hand, unnecessary hospitalization is harmful to the patient and wasteful of money. Why should such a stage of tuberculosis last one year or more, all the time yielding an elevation of temperature that resists even complete bed rest and shows no increase on free exercise? Unless, indeed, we assume that such a closed and cryptic stage yields more systemic intoxication than the open lesions with free external drainage. Certain it is that in most of the minimal and moderately advanced cases seen fairly early in the disease, and even in many far advanced cases, a few weeks or months in bed will reduce the temperature to normal, a result not obtained in the group under immediate consideration. H. Sewall actually considers that the temperature in occult tuberculosis offers a distinct contrast to that of incipient pulmonary tuberculosis, the former commonly exhibiting no febrile rise, while the latter usually shows an afternoon elevation of temperature. An investigation of fever in nonpulmonary tuberculosis, for example in the glands or bones, many times yields barren results, as the temperature has not been taken often enough or with sufficient care. Available records indicate, however, that nonpulmonary tuberculosis can be quite active and yet reveal no fever, or that the fever will subside rapidly on complete rest, exhibiting a marked contrast to the cases of obscure fever under discussion.

The third group containing abnormal conditions that may suggest themselves as possible sources of constant slight fever deals with those cases which are not due to focal infections or chronic inflammatory affections of any type. Various nervous and psychical conditions are interesting in this connection. Some neuropsychiatric specialists give us little encouragement along these lines, others think nervous conditions may be able to occasion fever of the type described. Unfortunately most of us are unfamiliar with any satisfactory series of temperature records in neuropsychiatric cases that might illumine the subject. Theoretically, it seems possible for nervous influences to affect the temperature either directly by acting on the thermogenic centres, or indirectly, by interfering with metabolism and by producing conditions favorable for bacterial activity, for example in the gastrointestinal tract. Endocrine disturbances suggest themselves as capable of playing some part in febrile reactions. Toxic goitre cases are at times associated with fever.

It appears reasonable to believe that whatever the immediate cause of a fever may be, even if infectious in nature, the primary cause may be entirely free from any infectious factor.

The fourth possibility, that some of these cases may have a temperature which for them is entirely normal, remains neither proved nor disproved. It might be assumed that in some individuals, because of the local blood supply in the mouth, or for some other local reason, the temperature registers higher in them than in most persons. Such a thought receives some support in those cases in which the rectal temperature more closely approximates the normal than does the oral. One might hazard a guess that some human beings have less stable thermogenic centres, so that they register more delicately slight toxic and other influences not detected in the majority of cases. The safest policy on our part as far as the febrile individual is concerned, is to admit our ignorance of the cause of such fever, so that efforts to unravel the etiology will not be abated.

The answer to the practical question as to the disposition of cases with prolonged slight fever of undetermined origin will vary somewhat with the types of cases. All of these persons should be kept under some sort of observation though by no means should all be indefinitely hospitalized. All will do well to profit by at least a limited period of hospitalization or its equivalent, in order to watch more

closely the temperature and to help in diagnosing the case. Those appearing in good health and reacting well to exercise can relatively soon be discharged from the hospital. Those who are manifestly in poor health should ordinarily be discharged from a tuberculosis hospital after a few months of close study, hospitalization in a different type of institution being sometimes indicated.

TYPICAL CASES OF OBSCURE FEVER

Other typical cases exhibiting obscure protracted fever are as follows:

Case III.—Male, aged thirty, admitted June 1, 1922, discharged January 1, 1923. The patient presented slight but distinct finger clubbing extending back of nails. On admission, he was feverish, sweating, very tired and weak, but fairly well on discharge. One hundred and forty-seven evening temperatures prior to discharge:

Below	37	C. (98.6 F.)	1	
	37	C. (98.6 F.)	15	10 per cent.
	37⅕	C. (99 F.)	68	46 per cent.
	37⅖	C. (99.3 F.)	48	33 per cent.
	37⅗	C. (99.7 F.)	15	10 per cent.
			147	100 per cent. (approximately)

Case IV.—Male, aged twenty-eight, admitted October 5, 1922, discharged December 31, 1922. Chief complaint was compensation difficulties. Seventy-eight consecutive evening temperatures:

Below	37	C. (98.6 F.)	4	5 per cent.
	37	C. (98.6 F.)	7	8.7 per cent.
	37⅕	C. (99 F.)	19	24.4 per cent.
	37⅖	C. (99.3 F.)	30	38.5 per cent.
	37⅗	C. (99.7 F.)	13	16.7 per cent.
	37⅘	C. (100 F.)	5	6.4 per cent.
			78	100 per cent. (approximately)

Case V.—Male, aged twenty-six, admitted August 9, 1921, discharged January 30, 1923. The patient was suffering from war neurosis, was averse to leaving the hospital, presented marked clubbing of fingers extending back of nails. Fever was present last half of stay in hospital. He was twenty pounds underweight; walked three miles a day. One hundred evening temperatures prior to discharge:

Below	37	C. (98.6 F.)	5 per cent.
	37	C. (98.6 F.)	21 per cent.
	37⅕	C. (99 F.)	35 per cent.
	37⅖	C. (99.3 F.)	27 per cent.
	37⅗	C. (99.7 F.)	10 per cent.
	37⅘	C. (100 F.)	1 per cent.
	38	C. (100.4 F.)	1 per cent.

Case VII.—Female, aged thirty-four, admitted January 27, 1922, still in hospital February 15, 1923 (discharge recommended). Her chief complaint was fatigability, would walk only twenty-five minutes a day; eight pounds underweight; tonsillectomy with no appreciable effect. One hundred consecutive evening temperatures:

Below	37	C. (98.6 F.)	6 per cent.
	37	C. (98.6 F.)	4 per cent.
	37⅕	C. (99 F.)	3 per cent.
	37⅖	C. (99.3 F.)	14 per cent.
	37⅗	C. (99.7 F.)	32 per cent.
	37⅘	C. (100.04 F.)	30 per cent.
	38	C. (100.4 F.)	11 per cent.

In addition to the type of cases forming the basis of this paper there have been a number of others at Oteen exhibiting a comparable type of fever, diagnosed also as nontuberculous, but with some condition that for obvious reasons excluded them from the group in question.

Case VIII.—Male, aged twenty-seven, admitted August 18, 1921, discharged about February 16, 1923. Diagnosis: Psychoneurosis, neurasthenia, mild type, perforated nasal septum, malingerer. Chief complaints were fatigability and chest and shoulder pains. One hundred consecutive evening temperatures:

37	C. (98.6 F.)	9 per cent.
37⅕	C. (99 F.)	29 per cent.
37⅖	C. (99.3 F.)	37 per cent.
37⅗	C. (99.7 F.)	17 per cent.
37⅘	C. (100 F.)	8 per cent.
38	C. (100.4 F.)	0 per cent.

Case IX.—Female, aged thirty-nine, in the hospital eight months. High blood pressure (systolic usually 170), gastroenteroptosis, subnormal weight, chief complaint marked fatigability, also quite nervous. One hundred consecutive evening temperatures:

Below	37	C. (98.6	F.)	1 per cent.
	37	C. (98.6	F.)	1 per cent.
	37⅕	C. (99	F.)	1 per cent.
	37⅖	C. (99.3	F.)	16 per cent.
	37⅗	C. (99.7	F.)	52 per cent.
	37⅘	C. (100.04	F.)	23 per cent.
	38	C. (100.4	F.)	6 per cent.

Case X.—Male, aged twenty-three, admitted December 9, 1920, discharged February 3, 1923. Fever chiefly since contracting gonorrhea one year ago. Diagnosis: Chronic gonorrheal prostatitis, perforated nasal septum. Patient was very averse to being discharged. One hundred consecutive evening temperatures:

Below	37	C. (98.6 F.)	4 per cent.
	37	C. (98.6 F.)	16 per cent.
	37⅕	C. (99 F.)	38 per cent.
	37⅖	C. ((99.3 F.)	25 per cent.
	37⅗	C. (99.7 F.)	12 per cent.
	37⅘	C. (100 F.)	3 per cent.
	38	C. (100.4 F.)	2 per cent.

SUMMARY

Type of cases with fever of undetermined origin are briefly presented because of the diagnostic difficulties encountered and because of the very practical considerations involved. It is not claimed that all means of investigation known to medicine have been available for clearing up these cases. The etiological possibilities involved are briefly discussed in a general way.

That the elevation of temperature above the average normal in some of these individuals is normal for them cannot be assumed or denied on the evidence available. Rectal temperatures taken at the same time as the oral ones are indicated to aid in solving the question. Careful and continued temperature studies on many other chronic diseases besides tuberculosis would be of great value.

Such cases as are herein discussed, while deserving all suitable treatment as well as investigation, should not be diagnosed as tuberculous for an indefinite period just because no other cause has been found.

This study included several other cases, but lack of space prevented their publication.

The Cecocolic Sphincteric Tract*

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The purpose of this paper is to call attention to certain anatomical, physiological and clinical data in reference to a certain portion of the colon just distal to the caput coli known as the cecocolic sphincteric tract. This tract is but one of a variety of anatomical formation which, both in the lower animals and in man, has for its important object the retention of the cecal content for such a time as is necessary for the complex digestive changes to take place. Its significance in the human has not been appreciated until now. Röntgen ray studies, however, would indicate that this tract functionates to a greater or lesser degree in human beings and that by virtue of its anatomical markings, physiological manifestations, and pathological stigmata it must be taken into consideration in the studies of the caput coli, a portion of the bowel of great importance, which may be said to bear the same relation to the large bowel as the stomach does to the small bowel.

It is not necessary to enter into a detailed description of the comparative anatomical features of this portion of the bowel, which has been treated elsewhere (1). These studies show that even when the cecum is absent, as it is in about twenty-five genera of mammals, the commencement of the colon is separated by the ileocecal sphincter, from the ileum on one hand, and by another more or less demarcated sphincteric tract, the cecocolic sphincteric tract, from the remainder and colon on the other. Between these sphincters is the cecal colon.

According to Huntington, the vermiform appendix in man and the higher primates suggests that at one phylogenetic period the forms of this order or their immediate ancestors were largely or entirely herbivorous and possessed a more extensively developed cecal apparatus than their omnivorous descendants of today.

From the viewpoint of function, Keith states that the ileocecal region of the fully developed mammalian cecum (as exemplified in the rabbit and cat) may be divided into three parts:

1. That portion of the cecum which lies above the ileocolic opening, called the cecal colon. It is usually regarded as the beginning of the ascending colon and corresponds to the primitive cecum of the lower vertebrates.

2. That portion of the cecum which lies below or proximal to the ileocolic orifice, which is the true cecum, arising as a diverticulum from the cecal colon.

3. The apical or appendicular portion of the cecum which has a narrower lumen and thicker walls—the appendix.

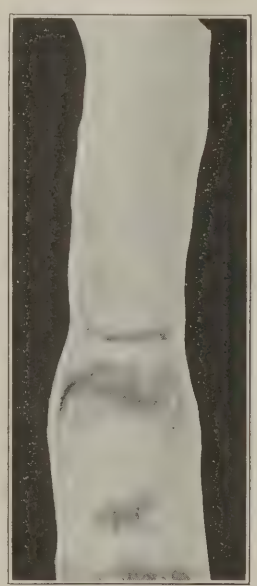


FIG. 1.—Ileocolic junction of the simple type (Nandinia binatata). There is a ridge of thickened musculature and a valve at the junction of the ileum and the colon, which is of slightly larger lumen. There is no dilatation of cecal pouch.

The same three divisions exist in the human cecum,[1] excepting that whereas in the rat there is an additional sphincteric ring between the cecal colon and the cecum, which may be called the intercecal sphincter, in the human being this sphincter is represented by a vestigal strip of muscular fibres, the retinacular bands, which form the frenulæ of the valves.

In the human being it is generally considered that the ascending colon begins above the ileocolic orifice. There is evidence which would indicate that this is not a correct view, but that there exists above the cecal colon, a sphincteric tract, which though imperfectly developed still functionates in a greater or less degree and corresponds to the cecocolic sphincteric tract so well developed and functionally active in many vertebrates, particularly those which live on a mixed or vegetable diet, as has already been pointed out in the birds, horse and rodents.

Even if the actual anatomical conformation cannot always be demonstrated—the site of this tract is made manifest by contractures which are important in the normal and abnormal functioning of this portion of the colon.

ANATOMICAL EVIDENCE

The examination of the cadaver shows, in a number of cases, particularly when the intestines are hardened *in situ*, and more strikingly in children, between the gas filled cecum and the true ascending colon an area, situated from one to two and one half inches above the ileocolic orifice which is firmly contracted and empty, in marked contrast to the gas distended caput.[2] This portion of the bowel has a narrower lumen than the cecum below and the colon above. Its wall is thicker and its musculature firmer. Its color is also different from the adjoining portions of the bowel. (Fig. 9.)

Figure 10 from *Quain's Anatomy*, shows the contracted commencing segment of the ascending colon in a specimen hardened *in situ*. The cecum, with its appendical opening, the cecal colon above the ileocolic orifice, and the contracted portion above the cecal colon are shown in a specimen, intended really to show the relations of the ileocolic orifice. So also in the specimen from Professor Hunting-

*From the X Ray Laboratory of Bellevue Hospital.

[1]At a certain period of embryonic life the human cecum is very long and resembles that of the rodents in its structure.

[2]The presence of this constricted area would explain the accumulation of gas in the cecum in a large percentage of individuals in life in greater quantity than in the upper part of the ascending colon. The entry of this gas into the ascending colon is impeded by the sphincteric nature of the muscular wall of the cecocolic tract.

FIG. 2.—The lower end of the small intestine with the cecum and part of the large intestine of a lizard. (Iguana tuberculata). The small intestine terminates in a slitlike aperture at the edge of a ridge that projects for some distance into the cecum, forming a valve, calculated to prevent any return of food into the ileum. The orifice is marked by a bristle. At one side, this valve projects into the small blunt rounded end of the true cecum, at the other into a large chamber—the cecal colon. This is shut off from the further portion of the intestine by a transverse partition, in the centre of which is a conical valvular prominence, which by a rounded puckered orifice opens into the large intestine. Below this prominence are valvular folds of mucous membrane, projecting into the intestine like a series of shelves diminishing in diameter and producing a series of spiral passages. The caput coli (cecum and cecal colon) is here as a separate viscus with a valve between it and the ileum and another between it and the colon.

FIG. 16.—Photograph of specimen of dilated caput coli due to spasm of the cecocolic tract (Wilkie).

ton's collection, this narrowed area may be demonstrated (Fig. 5).

PHYSIOLOGICAL ACTION

According to Rutherford, the lower end of the ileum is controlled by a purely sphincterlike action of the circular intestinal muscle of the orifice. The musculature of the terminal part of the ileum extends for nearly four inches from the orifice. The contraction of the circular fibres keep the aperture closed till the condition of the contents, on one or the other side of the sphincter, initiates a reflex which relaxes the circular fibres, allowing the aperture to open and discharge more or less of their contents. This process may be assisted by the contraction of the longitudinal fibres.

Through the ileocolic sphincter, flatus and the semifluid contents of the ileum are discharged automatically, at a rate depending on the degree of peristalsis, into the cecal colon. The actual opening of the sphincter seems to be the final part of a wave of peristalsis along the ileum. The ileal peristalsis ceases at the cecal colon.

In most animals the cecal colon acts as a distributing chamber, directing some of the contents into the true cecum and some into the ascending colon. Whether or not the retinacula really exercise a function in the human and the cecal colon acts as a distributing chamber under normal conditions as it does in the lower animals is still a question.

It is logical to believe on a comparative anatomical basis and on studies of human cases in ulcerative disease that the valves and retinacula about the ileocolic orifice may, under certain conditions, also functionate in directing the ileal contents of the cecalcolon, through the cecocolic sphincteric tract into the colon and that contraction of these bands may shut off the true cecum.

The cecocolic tract exhibits its physiological function—to retard the egress of the cecal contents into the ascending colon, until such time as cecal digestion and absorption be complete. It does this by virtue of its anatomical characteristics of a narrow lumen and its physiological characteristics of tonic contraction. Materially contributing to the same end are the anastaltic movements of the proximal colon.

That the point of origin of peristalsis of the true proximal colon is in the cecocolic tract may be proven by administering a small bismuth enema to a patient placed in a favorable position with the rectal tube *in situ* so that the enema may be expelled and the colonic peristalsis studied. First the distal colon contents are expelled into the pelvic colon; then a ring of contraction (not haustration) is visualized in the colon at a point in the cecocolic tract which advances towards the distal colon and removes the contents into the distal colon. Then there is a contraction of the cecum and expulsion of content into the proximal colon. These direct movements do not, however, compare in frequency with antiperistaltic waves which, at first at least, appear to be the predominant movement. A ring of contraction appears in the transverse colon which move towards the cecum. After several antiperistaltic waves there is a segmenting period with the formation and reformation of haustral segments. Then

FIG. 3.—The termination of t ileum and the beginning of colon of an ostrich. Between ileum and colon there is a w demarcated chamber correspo ing to the cecal colon of m mals. It is separated from ileum by a sphincter, the il colic, and from the colon by portion having a narrowed lum called the cecocolic sphincte tract. Two long ceca open fr the cecal colon by a common fice, guarded by a strong ce sphincter.

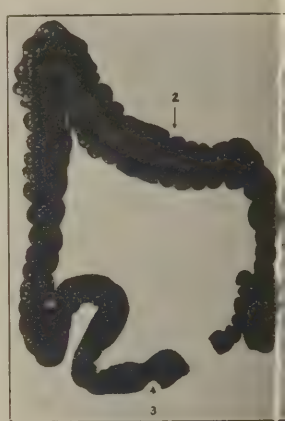


FIG. 11.—Diagram of co showing: 1, sphincteric tract a 2, the location of the sphincter Cannon, Boehm, Elliot, Smit Roith and others. A thicke circular muscular coat was fou at this point by Rost. It is t point of origin of antiperistalsis the proximal colon and the dir peristalsis of the distal colon. contracted point of rectosigmoi apparatus.

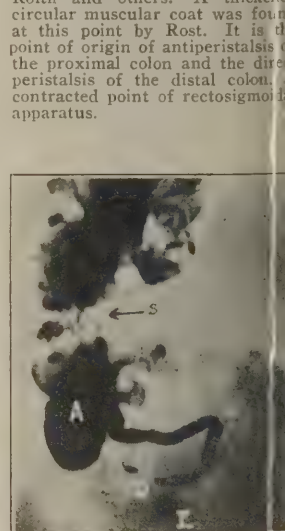


FIG. 14.—Spasm of the cecoco sphincteric tract in an append inflammation (George).

perhaps further antiperistalsis and then the direct peristaltic waves.

The true proximal colon extends therefore from the cecocolic sphincteric tract to a point beyond the hepatic flexure, in the right half of the transverse colon where a sphincter is located (Rieder, Cannon, Elliot, Smith, Roith. Rose and others), which when stretched by distention of bowel begins to pulsate. (Fig. 11.)

NERVOUS CONTROL

It is well known that the ileocolic sphincter is controlled like the pyloric sphincter through the sympathetic nervous system and that stimulation of the inferior mesenteric plexus causes not only contraction of the sphincters, but inhibition of peristalsis of the ileum and colon.[3]

The manner in which the activity of the cecocolic sphincteric tract is controlled is not known. It appears normally to be in a state of contraction. It receives no motor impulses whatever. Stimulation of the sympathetic splanchnic nerves, supplying the proximal part, does not cause any change, thereby differing from the ileal sphincter in which contraction is produced. It is subject to numerous reflex influences. Perhaps its activity is controlled through chemical stimulus acting through local nerve mechanism in the wall of the colon.

This myogenic nerve control may be from a nodal centre in "Auerbach's collar," which surrounds the ileocecal junction. It is through this tissue, which contains elements to be grouped with Auerbach's plexus, that the central nervous system exercises its control over many of the complex movements of this region. In the rat there is an extension of this collar both on the anterior and posterior aspects of the colon. In the lower animals the action of the intercecal sphincter (between the cecal colon and cecum) and of the cecocolic sphincteric tract are synchronized when the latter is closed, the intercecal sphincter is open and vice versa (Fig. 7).

A synchronism in action exists between the action of the ileal sphincter and the cecocolic sphincteric tract. A disturbance between the synchronized action of these sphincters may result in disturbed physiological function, which may be a factor in the production of disease, as will be shown later.

FIG. 12.—Cecocolic sphincteric tract—enema examination. At a point about three inches above the base of the cecum extending distally for a distance of about two and one half inches is a portion of the bowel having a diminished lumen and small haustrations. The cecum and terminal ileum are well filled.

FIG. 13.—The narrow lumen at cecocolic sphincteric tract may be seen at a point about two and one half inches above the base of the cecum. It extends over an area of about one and one half inches, giving way into the proximal colon. Enema examination—manual pressure.

PATHOLOGY

Investigation shows that developmental constricting bands, pericolitis, simple ulceration, tuberculous ulceration, fibrous stricture and carcinoma, when found in the ascending colon, are most commonly situated in the cecocolic tract. The liability of this portion of the bowel to pathological processes may be explained by several reasons:

1. That it is a vestigeal structure.

2. That its lumen, because of both anatomical and physiological narrowing, is particularly vulnerable to disease, a characteristic which it has in common with other points of luminal narrowing, such as are found in the esophagus

[3] The proximal colon does not receive any motor impulses. Elliot and Smith state that in carnivora such as the cat and dog, stimulation of the sacral visceral nerves causes constriction and emptying of the large bowel from cecum to rectum. In herbivorous animals and in man, the effect extends only to the distal parts of the colon — the cecum, ascending and hepatic part of the transverse colon are outside the influence of this mechanism.

in the pyloric end of the stomach, and in the pelvirectal junction of the colon.

3. That it is a region of great functional activity.

VENTRAL VASCULAR FOLD FUSING WITH INTERMEDIATE NON-VASCULAR FOLD AND LIMITING A VENTRAL ILEO-CÆCAL FOSSA
INTERMEDIATE NON-VASCULAR FOLD

FIG. 4.—Ileocecal junction of monkey (cercopithecus) showing the narrowed portion of bowel above the ileocecal junction—the cecocolic sphincteric tract. (Huntington, Columbia University Museum).

SPASM

Spasm of the cecocolic sphincteric area is a common phenomena. Such spastic contraction may be due to disease in the area itself, to the presence of

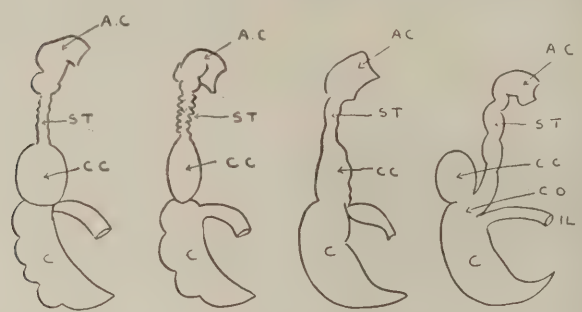


FIG. 7.—Illustrating the four functional states of the ileocolic region of rats. In A and C the ileocecal sphincter is closed, in B and D it is open. In C and D the cecocolic sphincteric tract is open, in A and B it is closed. In A and B the intercecal sphincter is closed, in C and D it is open. In C the cecal colon and cecum are practically one chamber. A C, ascending colon; S T, cecocolic sphincteric tract; C C, cecal colon; C, true cecum. (Arthur Keith).

irritating contents in the ileum or cecum, to disease of the terminal ileum, appendix, cecum, or the cecocolon, or to such pathological conditions, as ulceration or tumor of other portions of the colon

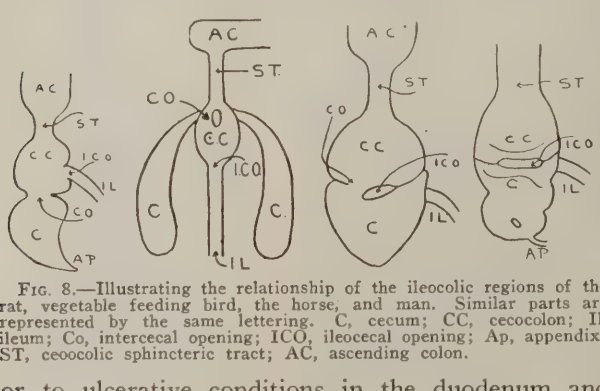


FIG. 8.—Illustrating the relationship of the ileocolic regions of the rat, vegetable feeding bird, the horse, and man. Similar parts are represented by the same lettering. C, cecum; CC, cecocolon; Il, ileum; Co, intercecal opening; ICO, ileocecal opening; Ap, appendix; ST, ceoocolic sphincteric tract; AC, ascending colon.

or to ulcerative conditions in the duodenum and functional conditions of the stomach, or as a part of a general or local vagotonia. Such spastic contraction plays an important part in the production of cecal stasis. Leaving out of consideration neoplastic obstruction, ileal stasis (meaning delay of emptying time of the ileum) has been ascribed to incompetency of the ileocolic sphincter, and ileal adhesions including Lane's kink. Perhaps more important than any of the above causes is spasm of the cecocolic sphincteric tract.

It is only by spasm of this portion of the colon that cecal retention can be explained in the presence of the increased peristaltic hyperactivity of the cecum, such as is associated, for instance, with appendicular disease. The marked hyperactivity of the cecum in such cases may be evidence of attempted compensatory activity in an effort to overcome the spasm. If in the presence of spasm the ileocecal valve is competent there follows a gradual dilatation of the caput coli with its attending stasis and the sequela of a low grade inflammatory condition with the formation of pericolic adhesions, which further

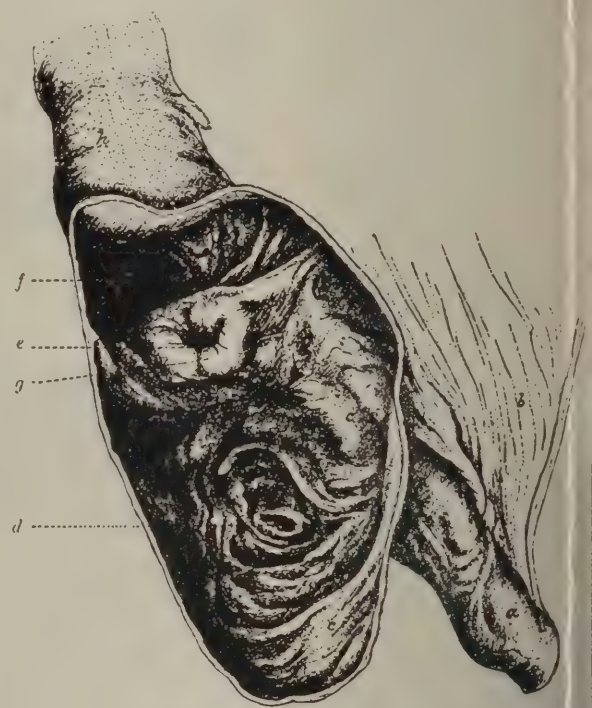
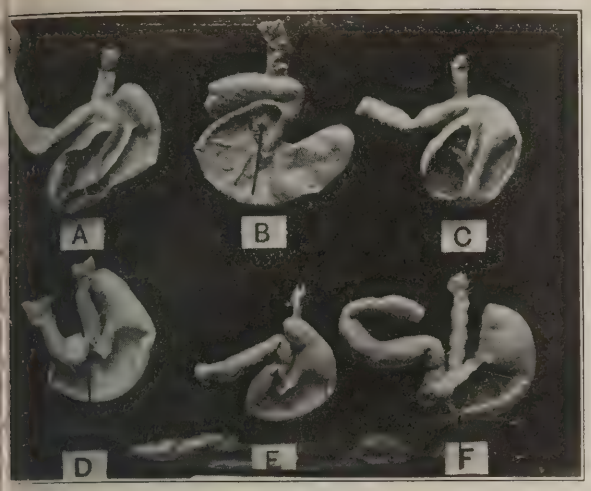


FIG. 10.—Proximal colon, hardened *in situ* (*Quain's Anatomy*) f, cecal colon; e, ileocecal orifice; c, cecum; d, orifice of appendix a, ileum; h, cecocolic sphincteric area.

increase the stasis, and thus a vicious circle is produced. The appendix may become involved in the low grade inflammatory process. If, on the other hand, the ileocecal valve is incompetent, then spasm of the cecocolic tract results in the regurgitation of the cecal contents into the ileum with the well known clinical manifestations of intestinal toxemia. The prolonged retention of the cecal contents has the effect of slowing down on the onward passage of the intestinal contents along the rest of the colon. The changes characteristic of the spastic or dyskinetic form of constipation may be associated with spasm of the cecocolic tract. The relief of spastic constipation by atropine is produced through relaxation of this hypertonicity or spasm.

It is further conceivable that severe and sudden spasm may occur as a result of severe and acute irritation of the terminal ileum. If the ileocecal valve is competent, this would lead to overdisten



IG. 6.—The ceca of a series of white rats killed one-half, one, two, e, six, forty-seven hours after food. The ileum opens into the of the cecum, a segment of the colon—physiologically, distinguish- from the apical part or true cecum and known as "cecal colon" in ch the muscles act independently of those of the colon, from the of the cecum. Between the cecal colon and cecum is a definite ncter muscle. For an hour or more after feeding both cecal colon the cecum are distinct and separate chambers but as digestion eeds the chambers fuse into each other.

n of the cecum—and the appendix. The sensation pain would then appear as a result of this over- tention, for the pain is due, not to contracture, to increased tension of the bowel with muscular etching. The overdistention would produce en- rgement and on this fertile soil the organisms uld proceed to carry out their rôles in the pro- ction of acute appendicular and cecal inflam- tion.

G. 5.—Ileocecal junction (human) showing the narrow portion of colon (indicated by the arrow)—the cecocolic sphincteric tract. portion of the colon between the ileocecal orifice and the narrowed is the cecal colon. (Huntington).

Should the spastic contraction be relaxed before severe distention or congestion has taken place, the symptoms may be relieved. Such cases are clinically not rare. They are often diagnosed as appendicular colic. The pain is not associated with a rise of pulse or temperature or a change in the blood picture. The finding of a normal appendix by the surgeon in such cases may be explained on the theory of such spasm. There are a number of cases in which, a short period after the removal of the appendix, the local and reflex symptoms recur. It is possible that spasm of the cecocolic tract may be responsible for clinical symptoms in such cases. The spastic contraction of the tract being relieved by the anesthesia may explain why this condition

FIG. 9.—Cecocolic sphincteric tract in normal child. Located at a distance of eight and one-half cm. above the lowest part of the cecum it is seen as a narrow tract three and one half cm. long. It has its origin at a point about five cm. above the ileocecal orifice. The portion of the colon below the beginning of this narrow tract is divided into two parts by the ileocolic orifice. In the contracted area there are four haustrations on the mesial aspect. These, however, are not symmetrical, those on the outer aspect being somewhat larger. The portion of the colon below the contracted area is of dark brown color; that above the contracted area is of a reddish brown color. The contracted area is of a whitish pink color.

has not been previously demonstrated by the surgeon.

A spastic contraction of the cecocolic sphincteric area can be demonstrated röntgenologically in these cases where no röntgenological evidence of pathology of the appendix is evident. Both in these cases and in those in which there has been a recurrence of symptoms (pain in the right iliac region, distention, fullness, constipation and reflex gastric symptoms) after the removal of the appendix, for socalled chronic appendicitis, the examination discloses the presence of a spastic contraction of the portion of the colon, which corresponds to the site

FIG. 15.—Spasm of the cecocolic tract in colitis. Note the overdistention of cecum and appendix. Enema examination.

of the cecocolic sphincteric tract, associated with definite and more or less prolonged cecal stasis.

On the other hand, a spastic state of this tract can also be demonstrated röntgenologically in cases showing definite röntgen evidence of appendicular disease. Not only has this been demonstrated in our own cases, but it may be seen in the illustrations of others (*George and Leonard*—Figs. 252, 282, 287, 293).

This indenture or incisure is situated at a distance of one and a half to four inches from the ileal entrance into the cecum. Occasionally this contracted area has been noted nearer to the hepatic flexure when the caput is dilated. Manual pressure fails to obliterate this contraction. The area may be from one to two and a half inches in length, or may be a short complete incisura. It is frequently hidden in plate examinations by the haustra above and below it, but may usually be demonstrated by fluoroscopic palpation and the examination in the oblique position.

The break in the bismuth shadow is usually distinct. Below it is seen the shadow of the cecalcolon and cecum, usually of considerable size; while above it is the ascending colon shadow. In cases where this spastic area stands out with great sharpness and clearness and shows a persistency and there is röntgen evidence of an abnormal appendix, the onset of an acute attack is not far off.

Spasm of the cecocolic tract may thus be as important as any of the causes usually given for appendicitis.

In a proportion of cases duodenal ulcer spasm of the cecocolic tract may be observed. In s of these cases the evidence of appendicular ease was well marked. In others, the appen had been removed—but a spastic state of the c colic tract existed. It is, of course, not safe to i even in the instances of a constant concomitant a relation of cause and effect exists and still les conditions not invariably associated, neverthel it is justifiable to infer that spasm of the cecoc tract may have some bearing on the clinically rec nized association of duodenal ulcer and disease the appendix. So that it may be concluded in certain individuals spasm may be produced in cecocolic tract. This spasm may lead to cecal st and appendicular inflammation. The appendect may not, however, remove the cause of the spasm.

There are also cases of pure spasm of this t followed by slow but marked dilatation of the ca and even the small intestine. The contractio localized and may vary in extent from one to se inches. The constriction may be so marked a produce actual obstruction. Cases have not in quently been described in which all the symptom the intestinal obstruction were present; and ye operation no obstruction was found.

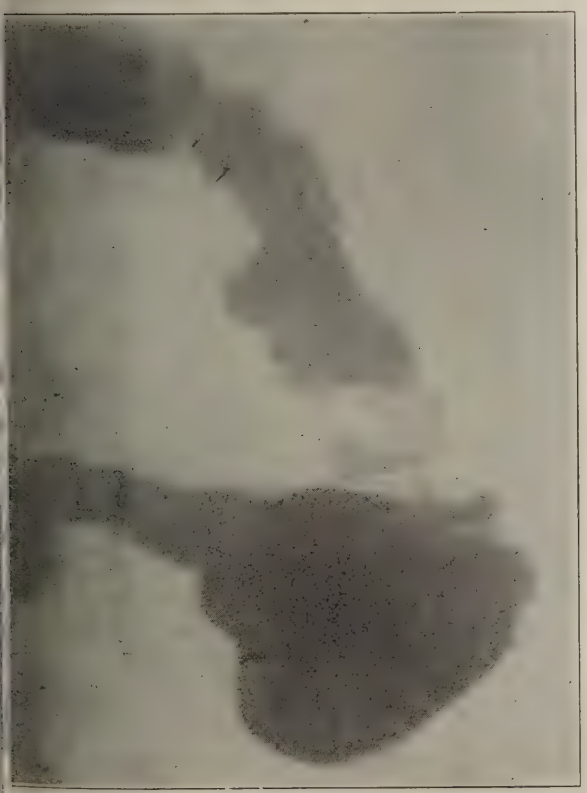
In some of the cases the cecal colon, cecum small intestines were found distended and a por of the colon distal to the cecocolic tract norm yet no obstruction could be discovered at the p of junction of the distended and collapsed bo as in a patient operated on by Barber.

This portion of the colon is involved more t any other part in congential peritoneal bands. presence of these peritoneal bands are not respo ble for the cecal stasis because they are freque

FIG. 17.—Spasm of the cecocolic tract in tuberculous ulcerat ileum.

FIG. 18.—Cecocolic sphincteric tract with ileum adherent.

n in newborn infants. It is evident that there st be another factor at work in the production the stasis, and that factor undoubtedly is spasm. e bands plus spasm due to any cause leads to a ited condition of the cecum.



IG. 19.—Scirrhus carcinoma of the cecocolic sphincteric tract. mpetency of ileocecal valve.

Jackson in 1909 recorded a series of cases previously diagnosed as chronic appendicitis in which at operation the appendix was found to be normal, but in each case he found a thin transparent vascular membrane stretching from the right flank over the front of the ascending colon. He divided the membrane and stated he was able to give these patients sure relief. This membrane was believed by Jackson to be responsible for the symptoms, and yet this membrane which had been previously described by the Jonnesco is found in about fifteen per cent. of bodies, in the fetus, and in children—in individuals who never exhibit symptoms in the right iliac fossa. Is it not more logical to believe that the symptoms in Jackson's and in all such cases were and are due to spasm—the fold being predisposing factor towards the production of disease—and that when, because of the stasis, a chronic inflammatory condition was instituted, this process converted a

FIG. 20.—Carcinoma cecocolic sphincteric tract from specimen in pathological laboratory, Bellevue Hospital, through courtesy of Dr. Symmers.

developmental membrane into an inflammatory one and that then the inflammatory membrane plus the spasm produced the stasis?

INTUSSUSCEPTION

It is generally stated that intussusception is produced by an irregular peristaltic movement, at a moment when a portion of the bowel is sharply tonically contracted. The active part of the process of invagination is taken by the outer layer, and the tendency is for the bowel to creep over a narrowed portion. This may be demonstrated by electrically producing a contraction of a portion of the colon of an animal when its invagination by the adjoining part may be observed.

There is a form of intussusception belonging to the ileocecal variety (the commonest of all varities), in which the inversion is said to begin at the junction of the cecum and colon, the cecum and ileum forming

the intussusceptum, the colon above folding over the cecum and ileum. The presence of the cecocolic sphincteric tract serves to explain this form of intussusception. In the presence of irregular peristaltic activity this constricted area presents the necessary condition for the invagination.

INFLAMMATION

The portion of the colon corresponding to the site of the cecocolic sphincteric tract appears to be a favorite site of colitic ulcerations, fibrous stricture and tuberculous disease. Cramer has pointed out that the upper part of the cecum and the lower part of the ascending colon are frequently the site of inflammatory processes.

Several observers have directed attention to the frequency of a localized acute inflammation in the cecocolic region without ulceration. These cases are usually diagnosed as appendicitis and operated in as such; but the appendix is found healthy and definite localized inflammatory swelling is found in this portion of the colon.

Mollison and Cameron in a series of fifty consecutive postmortem examinations found adhesions in the region of the cecum and the ascending colon in thirty-five cases. Such adhesions are often erroneously ascribed to a former attack of acute appendicitis. In only three cases of the thirty-five observed were the adhesions definitely grouped around the appendix.

Localized ulcerations have been described in this tract and in the cases of perforation by ulcer in the ascending colon the location of the ulceration has been most commonly in this area.

It is a question for serious consideration whether or not these ulcerations and adhesions have their origin in inflammation of the cecocolic sphincteric tract and whether the inflammatory condition is not predisposed to take place in this region by virtue of its tendency to spasm.

TUBERCULOUS ULCERATION

The commonest site for tuberculous ulceration is in the terminal ileum. The next is the lower part of the ascending colon. Eisenhardt found lesions in fifty-six of one thousand tuberculous subjects. Herscheimer found them in all but one of fifty-eight cases of phthisis. According to Nummery the ulcers are most commonly found in the cecum and ascending colon. In one hundred collected cases of hyperplastic tuberculosis the cecum and ascending colon were involved in eighty-seven. The analysis of the latter cases, however, will show that the majority of ulcerations are really not in the true cecum, but above the ileocecal valve and in the region of the cecal colon or, most commonly, in the cecocolic tract. When present in this region they produce the röntgenological signs of irregular filling defects—hypermotility of the ascending colon and irregular areas of spasm in the tract. Ulcerative disease of the terminal ileum may, however, also produce marked spasm of the cecocolic tract. In the case shown in the illustration (Fig. 17), the patient was a man of forty-eight years. The intestinal lesion was not suspected. The röntgen examination showed the marked constriction of the lumen of the colon in the regions corresponding to the site of the cecocolic tract.

At operation an ileal tuberculosis was found. Nothing could be found corresponding to the area of defect in the ascending colon. Evidently, then this was a pure spasm of the cecocolic tract.

The difficulty in obtaining a shadow of the cecum in tuberculous ulcerative processes is well known. The contents of ileum are partly regurgitated into the cecal colon for the valve is usually incompetent in these cases or rushed through the cecocolic tract into the colon. The shadow of the cecum can either not at all be visualized or visualized momentarily and rarely completely. This sign has been explained on the basis of spastic contraction of the true cecum. It is more logical to consider that the difficulty in filling the cecum in these cases may be due to spasm of what in lower animals corresponds to the intercecal sphincter—the retinacular bands. The ileal content then passes directly into the cecal colon and through the cecocolic tract into the ascending colon without entry into the cecum just as it does normally in some animals. The muscular bands do not, however, apparently always, functionate perfectly for a leak into the cecum may take place with incomplete outlining of this structure.

CANCER

It is generally recognized that the areas of narrowing in the lumen of the gastrointestinal tract are sites of predilection for carcinoma. It would appear from the published records of malignant disease of the colon that carcinoma of the ascending colon is relatively uncommon; though the cecum is considered to be a frequent site for malignancy.

In the London Hospital statistics there were placed in the ascending colon out of 188 cases and in Lichtenstein's series 6 out of 121 cases of carcinoma of the colon. In other words, 12 out of 309 cases—less than 4 per cent. There were, however, 41 tumors situated in the cecum out of 188 cases and 32 in the cecum out of 121 cases, and 17 out of a series of 72 cases reported by Clegg, making 90 cases of cecal carcinoma in a series of 381 cases or 24 per cent. If the cecal and ascending colon tumors are taken together and the 283 cases of the series of 625 collected by Tuttle are counted there are 385 cases of carcinoma in the cecum and ascending colon in a series of 1,006 cases. The comparative frequency of cancer in this part of the colon has therefore a value of 38 per cent.

Analysis of tumors of the colon, situated at a point distal to the ileocolic valve, which have been classed as cecal, will, however, show when anatomical boundaries above described are recognized, that the majority of these tumors are really located in the sphincteric area.

The following factors must, according to D. P. D. Wilkie, be taken into consideration in the determination of the exact anatomical position of lesions which obstruct the lumen of the bowel in the region of the ascending colon: first, the variety of tumor, whether it is of the stenosing scirrhous type or of the fungous, infiltrating type; second, the degree of obstruction produced by the lesion; third, the tendency of the disease to infiltrate and cause shrinkage of the wall of the gut; fourth, the competency or incompetency of the ileocecal valve. Thus a scirrhous carcinoma may involve only a ring of the bowel

wall, producing marked stenosis of the lumen, but if associated with a competent ileocecal valve, there may result such a dilatation of the cecum and cecal colon as to displace the growth upward and make it appear as if the growth was located close to the hepatic flexure, when it really has its origin at a much lower point. If the growth be of the infiltrating type with but little obstruction of the lumen, the shrinkage of the caput coli may be such as to make it appear that the lesion is at the level of the ileocecal valve when it really has its origin at a higher point, in the cecocolic sphincteric area.

If there is an incompetency of the ileocecal valve, there will be no displacement of the tumor bearing area even though the tumor is of the scirrhous type, though the terminal ileum will undergo marked distention.

SUMMARY

1. The caput coli may be divided into the cecum and cecal colon.
2. The retinacular bands supposed to be vestigeal strips may actually functionate and by spasm partly or completely shut off the true cecum from the cecal colon.
3. The cecal colon acts as an imperfect distributing chamber between the cecum and the cecocolic tract.
4. There is anatomical comparative anatomical, physiological, radiographic and pathological evidence pointing to the existence of a region in the human colon which corresponds to the proximal part of the colon in most herbivorous and omnivorous air breathing vertebrates, which is normally in tonic contraction.
5. This cecocolic sphincteric portion of the colon exhibits an active repulsion of the intestinal contents, until such time as cecal digestion and absorption are complete.
6. The contraction and relaxation of this portion of the bowel is undoubtedly regulated by chemical changes in a manner similar to the control of the pyloric opening and closing.
7. This sphincter may be thrown into the spasm with the production of cecal distention and stasis and thus initiate inflammation and ulceration.
8. The cause of the spastic condition is not always removed by appendectomy, for it may be demonstrated in cases in which there is a reappearance of symptoms after removal of the appendix.
9. The pathological lesions of the alimentary tract are more likely to occur at the points at or just proximal to regions of anatomic constriction, as in the esophagus and stomach. The cecocolic sphincteric area of the colon may be considered to be one of these areas.

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Clinical and Experimental Observations on Blood Sedimentation

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GENERAL

Since Fahreus (1), in 1916, drew attention to the phenomenon of increased sedimentation of the red blood cells in pregnancy, a generalized interest was awakened in the subject. It was soon afterwards shown that the phenomenon is to be seen in a variety of conditions, but especially in individuals who suffer from some more or less acute form of inflammation. From the historical viewpoint, this discovery of Fahreus was far from new. The observation can be found in most medical works of the eighteenth century and also of the nineteenth. Under the name of Crusta Phlogistica or Crusta Inflammatoria or Buffy Coat, it can still be found in many of the books of medicine published in the latter half of the last century. Even Sir Alfred Garrod (2), who did such accurate chemical work in connection with uric acid in the blood in gout, mentions it as being of frequent occurrence in acute rheumatism. The relationship of acute inflammations with increased blood sedimentation was well brought out by John Hunter (3) in the last decade of the eighteenth century.

This remarkable investigator observed it especially in acute rheumatism in which connection he mentions that "thirty seconds after venesection there appeared on the surface of blood a layer of bluish transparent lymph, although no coagulation had yet started." J. F. Palmer (4), the editor of Hunter's works, makes some very interesting remarks in connection with the observation given above. He says, "Nothing can be more clearly proved than that there exists in the blood a greater disposition to separate into its component parts in inflammation than in the healthy state." Hunter has also shown that the sedimentation of the blood from an inflamed part does not differ from that from a noninflamed part of the same individual.

With the advent of Virchow and his cellular pathology, all humoral doctrines were relegated to the past and the observations given above were forgotten entirely until brought back to prominence by Fahreus. The same phenomenon of increased blood sedimentation was found apparently independently by Plaut (5) in various forms of psychosis, especially in general paresis. Then followed the observations of Linzenmeier (6) and a great many other investigators, mostly in Germany.

As to the exact mechanism of the phenomenon, we are still at a loss to explain it satisfactorily. The most widely accepted explanation is that it depends upon the fibrinogen content of the blood, since in defibrinated blood the sedimentation proceeds much more slowly. This is also quite in keeping with Hunter's original explanation. It is quite clear, however, that this is not the only factor, since it also depends greatly on the globulin content of the blood.

According to W. and H. Lohr (7), the phenomenon is greatly dependent upon the viscosity of the blood. It has also been assumed to be produced by specific ferments similar to those playing a part in the Abderhalden reactions; also due to surface tension, lipoids, colloids, and other unknown factors. It seems as if a great many more investigations will have to be carried out before this most interesting phenomenon will be satisfactorily explained. It may be of interest to mention here that among different animal species, we find under normal circumstances extreme differences of rate of sedimentation of the red blood cells. In the horse, for example, the sedimentation is exceedingly fast while in cattle it is extremely delayed.

PERSONAL OBSERVATIONS

The technic I employed in these observations was that of Linzenmeier. The test tubes are about 6.5 cm. in length and have a calibre of 5 mm. The tubes are marked at 1 c. c. and also in 18 mm. below this mark (Fig. 1). Coagulation is prevented by first putting .2 c. c. of a five per cent. sodium citrate solution in each tube and adding blood to the 1 c. c. mark. Gentle shaking or stirring is all that is necessary. The citrate merely serves the purpose of preventing coagulation; oxalated blood may also be used. Whenever time intervals are mentioned in this paper, they have reference to the number of minutes or hours that it took for the red blood cells to separate and settle to the 18 mm. level. By accelerated rate of sedimentation is meant precipitation to the 18 mm. level in less than one hour. If it took less than thirty minutes, the rate of sedimentation may be said to be very much accelerated.

EFFECT OF TEMPERATURE

Sedimentation proceeds the fastest at body temperature. At room temperature (20° C.), the rate of sedimentation is approximately eighty per cent. of that at 37° C. At 45° C. no sedimentation at all takes place, while at 0° C. it is exceedingly slight. It will therefore be seen that for all clinical purposes, room temperature answers the purpose best.

EFFECT OF H ION CONCENTRATION VARIATIONS

Fairly wide variations of the H ion concentration of the blood failed either to accelerate or retard its sedimentation. Similarly negative results were found after the addition of various isotonic salt solutions. N/5 solutions of sodium chloride, potassium sulphocyanate, potassium iodide, sodium sulphate, and sodium citrate when added in equal amounts to a given blood cause no alteration in the rate of sedimentation. The addition of bile, even in very small amounts, seems to delay sedimentation to a very marked extent.

VARIOUS MEDICATIONS

The effects of quinine, salicylates, and arsenic on the phenomenon were studied. Three groups of three patients each were used for this purpose. Each one of the first three patients received five grains of quinine every four hours for six doses. No apparent effect on the rate of sedimentation was noted. Three other patients received, each, ten grains of sodium salicylate every four hours for four doses, with similarly negative effects on the test. The last three patients of the group were given one fortieth grain of arsenious acid four times daily for four days. The sedimentation time was not altered. Profuse sweating was induced in four patients by means of the electric bake. It was found to have no effect on the rate of sedimentation.

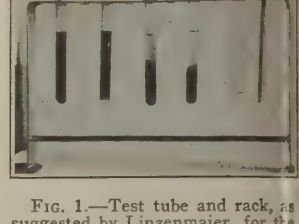

FIG. 1.—Test tube and rack, as suggested by Linzenmaier, for the performance of the blood sedimentation test.

As I have partly shown in a previous communication (8), neither small nor large doses of either galvanic or faradic currents alter the blood sedimentation in a given case.

OBSERVATIONS ON DIAGNOSTIC VALUE OF THE TEST

The material for this paper is based on over four hundred tests made on 362 different patients. Since these tests were performed on a great variety of affections, I deem it inadvisable to go into details about all of them but will confine myself solely to those conditions in which I found the rate of sedimentation to be accelerated. A general idea of the nature of the cases investigated can be gathered from examining the accompanying table (Table I).

SEDIMENTATION TEST IN PREGNANCY

An interesting group of cases in this series is the pregnancy cases. Forty such cases were examined for this test. Thirty-two of these cases were of three or more months' gestation, while the remaining eight were of less than three months' duration. As will be seen by examining the accompanying table (Table II), no instance of pregnancy beyond the third month presented a delayed rate of sedimentation. The average rate for the thirty cases was twenty minutes, while in a general way it may be said that the farther advanced in the state of pregnancy, the more pronounced is the acceleration of the sedimentation. In cases of pregnancy of less than three months' gestation, the sedimentation test is normal or accelerated to a negligible degree.

SEDIMENTATION RATE IN TUBERCULOSIS

Another important group of cases in this investigation consists of forty-four instances of tuberculous infection. In twenty-two cases of active pulmonary tuberculosis, the sedimentation rate was found to be greatly accelerated, while in twelve instances of healed or completely arrested cases of the same affection, the test was found to be normal. In two cases of early tuberculosis of the kidney and in eight cases of tuberculous cervical adenitis without secondary infection, the sedimentation time was also of normal duration.

TABLE I.

Tabulation of 362 cases, showing the general nature of the ailments and the rate of sedimentation.

No.	Diagnosis.	No. of Cases.	Fastest sedimentation time (minutes).	Average sedimentation time (minutes).
1.	Albuminuria-orthostatic	3	90	180
2.	Arthritis, chronic	25	18	100
3.	Arthritis, acute	10	10	28
4.	Asthma	14	50	120
5.	Angina pectoris	4	70	180
6.	Alcoholism, chronic	1	120	120
7.	Angioneurotic edema	2	70	135
8.	Bronchitis, chronic	4	80	180
9.	Cirrhosis of liver	4	50	150
10.	Colitis, chronic	12	55	150
11.	Diabetes	22	70	120
12.	Eczema, chronic	5	10	135
13.	Erysipelas	4	20	35
14.	Facial palsy	4	90	180
15.	Furunculosis	4	120	180
16.	Gout	5	50	165
17.	Gastric ulcer, uncomplicated	14	90	105
18.	Hyperthyroidism	8	40	135
19.	Herpes zoster	2	70	180
20.	Hypertension	12	90	180
21.	Myocarditis	3	120	150
22.	Migraine	9	150	180
23.	Menopause	10	120	180
24.	Neurasthenia	6	75	135
25.	Nephritis, chronic	19	20	90
26.	Neuritis	4	60	120
27.	Pleurisy with effusion	4	75	135
28.	Psychasthenia	1	90	90
29.	Psoriasis	4	60	60
30.	Pituitary disturbance	1	240	240
31.	Pregnancy	40	10	20
32.	Pneumonia	12	10	35
33.	Renal stone	3	90	150
34.	Syphilis (late)	22	15	30
35.	Thromboangitis obliterans	6	60	150
36.	Tonsillitis, acute	3	25	40
37.	Tuberculosis, active pulmonary	22	15	45
38.	Tuberculosis, completely arrested	12	90	120
39.	Tuberculosis, kidney	2	120	135
40.	Tuberculosis, glands	8	90	120
41.	Visceroptosis	12	90	135

TABLE II.

Showing the rate of sedimentation in forty cases of pregnancy.

No.	Months.	Sedimentation time (minutes).	No.	Months.	Sedimentation time (minutes).
1.	3	25	21.	4	40
2.	6	18	22.	4	30
3.	8	6	23.	4	40
4.	9	6	24.	3	25
5.	9	15	25.	7	20
6.	3	28	26.	8	15
7.	8	15	27.	In labor	10
8.	Full term	10	28.	5	25
9.	In labor	20	29.	4	35
10.	In labor	16	30.	3	30
11.	6	15	31.	4	40
12.	8	20	32.	4	25
13.	9	20	33.	1	180
14.	9	20	34.	2½	120
15.	Full term	15	35.	1½	150
16.	Full term	10	36.	1	180
17.	In labor	18	37.	2	105
18.	In labor	10	38.	1¼	120
19.	In labor	6	39.	1	210
20.	6	35	40.	2	50

TABLE III.

Showing the rate of sedimentation in twenty-five cases of chronic arthritis and its association with acute exacerbations.

No.	W.B.C.	Polys.	Sedimentation test.	Subsequent cause as observed for three months.
1.	5,400	62	++	Acute exacerbation two weeks later.
2.	6,100	48	0	No exacerbations.
3.	4,300	57	0	No exacerbations.
4.	5,200	71	0	No exacerbations.
5.	7,400	70	0	No exacerbations.
6.	6,100	63	+	Acute exacerbation ten days later.
7.	5,200	59	0	No exacerbations.
8.	4,600	61	0	No exacerbations.
9.	7,000	72	0	No exacerbations.
10.	5,400	70	+	Acute exacerbation six weeks later.
11.	3,900	62	0	No exacerbations.
12.	5,600	45	++	Acute exacerbation eight weeks later.
13.	7,200	53	+	Acute exacerbation three weeks later.
14.	5,600	61	0	No exacerbations.
15.	4,900	46	0	No exacerbations.
16.	5,200	58	0	No exacerbations.
17.	4,800	66	0	No exacerbations.
18.	6,400	71	+	Increased pain and limitation of motion two weeks later.
19.	7,100	58	+	
20.	6,900	62	0	No exacerbations.
21.	5,200	70	0	No exacerbations.
22.	4,300	58	0	No exacerbations.
23.	5,600	36	++	Excellent response to salicylates two weeks later, sedimentation normal.
24.	6,400	59	+	
25.	7,600	62	0	No exacerbations.

SEDIMENTATION TEST IN ACUTE INFLAMMATION

In twenty-nine cases of acute inflammation, the sedimentation phenomenon was found to be markedly accelerated. This group consisted of ten cases of acute arthritis (acute articular rheumatism), four cases of facial erysipelas, twelve of lobar pneumonia, and three of acute tonsillitis. The temperature in these cases ranged between 100° to 104° and the leucocytosis varied from a very slight (8,600) to a very pronounced degree (46,000). These investigations showed that it was not only elevation of temperature that produced the increased rate of sedimentation, since among the entire group of cases investigated were several cases of temperature of 102° and 103° F. with no corresponding effect on the sedimentation test.

SEDIMENTATION TEST IN ARTHRITIS

Another interesting group of cases consists of twenty-five instances of chronic arthritis. Out of these twenty-five cases, the sedimentation test was found increased in eight individuals. None of the patients included in this group showed any elevation of temperature, nor were any of them confined to bed. But from an analysis of the group, it is quite apparent that the inflammatory process in the eight patients with the accelerated rate of sedimentation still showed some signs of activity. As I have already said, from the general examination, one could hardly have made a distinction between the patients under consideration and the rest of the group whose sedimentation was normal. Six of the eight patients showed marked tendencies towards acute exacerbations of the arthritis at later days. During these exacerbations, the sedimentation rate was extraordinarily accelerated, while the temperature and leucocytes during the same period were elevated only to a very slight degree.

SEDIMENTATION TEST IN SYPHILIS

In twenty cases of syphilis examined, the sedimentation rate was found increased. None of the patients examined were in the first or second stage. They were all in the third or fourth stage of the disease. Six of the patients examined suffered from general paresis and it is in these cases that the rate of sedimentation was most accelerated. In two of these six cases, the red blood cells settled to the 18 mm. level within six minutes from the time the test was performed.

DISCUSSION

From what has been stated above and from the accompanying tables, it may be noted that an increased rate of sedimentation may be found in a variety of diseases and under many diverse circumstances. If, however, we do not forget its limitations, it is my opinion that the described test had great diagnostic value. This is especially true when it comes to a differential diagnosis. The test is of paramount importance in differentiating between inflammation of the pelvic organs and tumors or cysts located in the same region. As we all know, considerable inflammation of the pelvic organs may be present without an appreciable elevation of temperature or pulse rate. It is in just such cases that, given a pronounced acceleration of the blood sedimentation, our diagnosis may safely lean toward an

inflammatory process rather than to a noninflammatory mass. In this connection, it may also be mentioned that the test has been found serviceable in cases of gonorrheal salpingitis where no operation was deemed advisable while more or less acute inflammation existed. When the blood sedimentation came back to a normal level, the Fallopian tubes, at the time of operation, were found devoid of acute inflammation.

Even though the blood sedimentation is not accelerated in pregnancy until after the third month, this test has still a definite value in the diagnosis of this condition. During the fourth, fifth, and even later months, it frequently becomes necessary to differentiate the condition from myomata uteri or cysts. With a normal sedimentation time, pregnancy of more than three months' gestation is very unlikely.

In active tuberculosis, the sedimentation rate is greatly accelerated, but it is not so clear in my mind that the phenomenon is due to the tuberculosis *per se*. These cases are so frequently associated with secondary infection of the bronchi that it becomes difficult to rule out that factor. In tuberculous cervical adenitis without secondary infection, the sedimentation test does not seem to be altered from normal. The same holds true of tuberculosis of the kidney in the early stages. In three cases of tuberculous pleurisy with effusion, the sedimentation test was also found normal. Further investigation is necessary to determine the value of the sedimentation test in tuberculosis.

SUMMARY AND CONCLUSIONS

1. The rate of blood sedimentation was found increased in pregnancy, acute inflammations, active tuberculosis and the later stages of syphilis.

2. In certain cases of chronic arthritis, an increased rate of sedimentation may indicate that the inflammatory process is not entirely subsided and acute exacerbations may be expected.

3. The blood sedimentation test is of great value in differentiating pelvic inflammation from noninflammatory tumors of the same region.

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Congenital Absence of the Right Pectoralis Major Muscle

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On March 22, 1923, a young man applied to the recruiting officer, Fort Hayes, Ohio, for enlistment in the Army. A peculiar malformation being noted the man was referred to me for examination, when it was found that the right pectoralis major muscle was entirely missing.

Case.—The patient, H. T., was eighteen years of age, single, born in Ohio. He had been brought up in an orphan asylum, and had no memory of any severe illness or accident. He said the condition of the muscles around the right shoulder had always been as they were at present.

His father was fifty-nine and his mother forty-eight years of age, both of English birth and both living and well, though separated for some years. The patient was the youngest of eight children, one of whom had died and two had socalled weak eyes. Aside from these facts he knew very little about his family history.

Examination revealed an anatomical condition as is shown in accompanying photographs. There was no scar or evidence of surgical removal of the muscle. Function of arm was good. Teeth were of Hutchinson's type. Epitrochlear and postcervical glands were distinctly palpable. Scapulæ were slightly scaphoid. No other physical abnormalities were noted. One Wassermann test was made and reported negative. There was no opportunity to make further Wassermann or luetin tests.

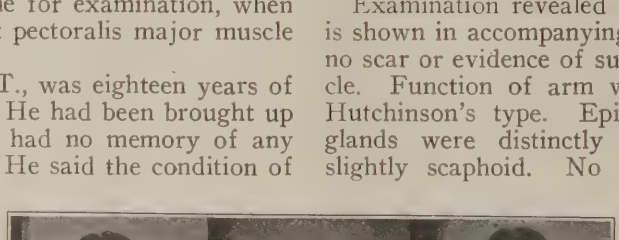

Fig. 1.—Showing anatomical condition of patient's shoulder.

In view of the family history and the clinical findings it is believed that the condition was due to congenital syphilis, latent.

Periarterial Sympathectomy

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The deliberate surgical ablation of the vasomotor erves lying in the tunica adventitia of large arteries as first conceived and practised clinically by Jabou- y in 1889. Claude Bernard, over seventy years ago, d noticed homolateral elevation of the arterial ood pressure after section of the cervical sympa- etic cord, but it has remained for Réne Leriche, of yons, to popularize the operation which he terms riarterial sympathectomy. He recently reported xty-four cases and has "obtained remarkable suc- sses and had complete failures."

The possibility now proved of modifying periph- al circulation and temperature by a simple and fe surgical operation places in our hands a potent erapeutic agency for the treatment of trophic and somotor disorders. Those interested in the sub- ct are referred to the numerous original papers of riche, upon whose work are based all of the arti- s in the rapidly increasing literature of this sub- ct. Tuffier of Paris has performed aortic sympa- ectomy for angina pectoris but emphasizes that, hough the pain is relieved, the pathological condi- n remains and the patient cannot overexert him- f without courting disaster.

Seifert has sounded a note of warning regarding versed effects. Some time must elapse before the act indications and contraindications can be laid wn definitively and, as the conclusions of the pro- sion will be based upon clinical experience, it uld perhaps be well for every surgeon to report individual results.

Subjoined is a brief summary of the first peri- erial sympathectomy performed in China.

CASE REPORT

ASE.—Number 1592. C. Y. S., female, aged nty-six, married, a housewife, was admitted to nan-Yale Hospital on December 21, 1922, com- ining of ulcer of the right foot of nearly five rs' duration. The patient's family history was relevant as far as was ascertainable. She had n married very young, had one child alive and l eighteen months old, and her husband was living l said to enjoy good health. The patient had had ht leucorrhea for the past year. Her past per- al history was otherwise negative.

Her present illness began about five years ago, n she noticed a vesicular eruption over the dor- n of the right foot. The vesicles ruptured and an r gradually developed accompanied by acute n. After a time this pain gradually diminished, the ulcer deepened and extended on to and be- en the last three toes. Discharge became abun- t and foul, and generalized bone and joint pain eloped a little later. The patient was a well de- ped woman of dull mentality. There was no cer- l adenitis, heart, lungs, and abdomen were nega- , and the extremities were also negative except a large deep ulcer on the anterolateral aspect of the right foot involving the last three toes. The edge of the ulcer was everted and its floor covered by much unhealthy granulation tissues. Foul discharge was present.

The clinical diagnosis was ulcer of the foot, probably of syphilitic origin. Laboratory reports showed a three plus Wassermann; urine showed albumin at eight of ten examinations; renal function (average of two tests) twenty per cent. Stool was negative except for ascaris. Blood count was within normal limits. Skiagram showed osteoporosis of disuse.

Operation was performed on December 28, 1922, as follows: Under infiltration analgesia with novocaine and adrenalin, the right superficial femoral artery was exposed by the classical incision for ligation at the apex of Scarpa's triangle. The sheath was opened without injuring the internal cutaneous or long saphenous nerves. No anesthetic was injected into the adventitia (which Meltzer, Odermatt, and others have shown is the only part of the arterial wall possessing pain sensibility). In two cases where he injected alcohol into the wall of the femoral artery, Handley noted no immediate local change in the calibre of the vessel but I feared that novocaine and adrenalin might act differently and so abstained lest premature contraction occur. The adventitia was readily dissected away at its plane of cleavage (the outer elastic membrane) for a distance of about one inch. The decorticated artery at first bulged slightly and then contracted, but not to a marked degree.

Leriche has shown that the phenomenon of contraction is slower in the larger arteries than in the smaller and is particularly tardy in the femoral. In twenty per cent. of Callander's cases it did not occur at all. The wound was completely closed in layers using fine catgut for all buried sutures. We found ablation of the living adventitia technically easier than in the cadaver and much easier than in the dog.

SURSEQUENT NOTES

December 30, 1922: Foot looked better; ulcer cleaner than before; granulation tissue very vascular and bled easily. Swelling was subsiding and the general condition was good. Local treatment of ulcer was given continuously the same as during the week preceding operation.

January 1, 1923: Neoarsenobenzol 0.6 gm. intravenously; no reaction. (This had been withheld previously to observe the effect of operation unassisted by specific therapy.)

January 4, 1923: Neoarsenobenzol 0.3 gm.; no reaction.

January 8, 1923: Foot was much better. Slight swelling over the dorsum was still present and moderately tender.

January 9, 1923: Neoarsenobenzol 0.45 gm.; slight chill in half hour followed by some fever in the afternoon.

January 12, 1923: Patient felt well. Operation wound had healed per primam. Prescription was given for mercury and potassium iodide three times a day.

January 18, 1923: Ulcer was almost well; no pus except between toes.

January 23, 1923: Ulcer was entirely healed. Patient still had some generalized bone pain but *never in the right foot.*

January 25, 1923: Neoarsenobenzol 0.6 gm.; no reaction.

January 30, 1923: Bone pain was still present; most marked in *left* leg.

February 1, 1923: Neoarsenobenzol 0.6 gm.; n reaction.

February 3, 1923: Discharge note. Patient le the hospital with the ulcer soundly healed. Ther was still some general bone pain which was wor in the left (unoperated) leg. She *walked* out. (Ha not reported back to date of writing.)

CONCLUSION

It seems possible that periarterial sympathectom followed by the intravenous injection of arsenobenz will enable us to treat luetic leg ulcers more effec ively.

Mental Reaction to Venereal Infection

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In addition to the fact that severe neurosis may develop immediately following venereal infection, medical literature has recorded the observation that in many persons who pass through venereal disease and are fortunate enough to escape more serious functional mental disorder, there appear minor neurotic reactions or distinct character changes. There has been a tendency, naturally more especially in the case of syphilis, to ascribe these mental reactions to toxic factors producing finer pathological changes in the central nervous system. The following brief case report shows conclusively that a psychological factor must not be disregarded in any attempt to establish an etiology and to describe a pathogenesis for these behavior changes. The case is the more instructive since it is one of the Neisser and not luetic infection; hence the question of organic central nervous system changes does not arise.

Case.—The patient, a Jewish male in the early twenties, entered into psychoanalytical treatment for relief from a depression of fairly long duration. Three years previous, after an illicit intercourse, he noticed a discharge from the penis. He consulted a competent genitourinary surgeon at once, and his worst fears were confirmed. He went to this consultation in a state of trepidation and anguish, and at the moment that the genitourinary specialist pronounced a positive diagnosis of acute gonorrheal urethritis the patient was overwhelmed by a depression which developed instantaneously, and whose subsequent manifestations were dejection, inability to work, and a fear of impotence. The acute urethritis lasted only a few weeks, and, so far as could be determined by the most careful clinical examination, was completely cured without complications, residuals, or sequelæ. Nevertheless, the attendant mental reaction persisted and became more severe as time went on. Indeed, in the patient there developed the following secondary mechanism. He began to indulge in a continuous series of heterosexual acts in order, as he rationalized it, to convince himself that he was not impotent. These selfimposed tests of sexual power invariably proved that the *potentia coeundi* was unimpaired. Yet the patient could not rid himself of his fear of impotence. Finally, after three years of suffering, he consulted a psychoanaly in the hope of finding relief from his symptoms.

It was a dream, reported during the treatmer which when interpreted, revealed the underlying u conscious factors that made this patient's mind vulnerable to a simple gonorrhea. The dream r as follows: *He was gazing eastward across the ocea He could see the coast of Italy where a tall buildi arose from the shore. This building was surmount by a peculiar globe. A giant approached the buildi and removed the globe.* The patient felt alarm and woke up quite distressed.

For reasons technical and specific to the ca under consideration that method of dream interpr tation was employed in which the patient is asked start associating freely to any dream element he m choose. In reply to such a request, the patient sai "Italy makes me think, of course, of Naples, whe I contracted my gonorrhea. The globe on top that building was so peculiar—it looked like t globe that is the trade mark of the Waterman fou tain pen." The next few associations followed rapid succession, the words almost leaping out of t patient's mouth: "Waterman—Wassermann—syp lis—gonorrhea." Here the patient stopped sho evidently a resistance against penetrating farther i the meaning of the dream. The patient next resum with a flow of thoughts which clearly was "talki past the point" and made no further progress w the dream. For technical reasons the analyst wi held comments and let the matter rest as it sto At the next treatment hour the patient mentioned t dream, acted as if he were ready to work it out, l failed to gain any more insight into it. The anal in no way interfered, merely waiting for the situat to develop its possibilities. At the following ho the patient said that something strange had occurr to him with reference to the dream. It had bothe him somewhat by bobbing up into his mind all d especially the giant's removing the top of the bui ing. This act made him think of cutting off penis. He then added, "This must have someth to do with the gonorrhea I contracted in Naple The analyst now no longer hesitated to supply obvious interpretation, viz., that the patient had

ted to his venereal infection as if it were a castra-
on. The patient accepted this interpretation as
rrect and immediately produced a wealth of cor-
borating material dealing with the castration theme,
ch as a memory picture of a younger brother's
rcumcision, enacted when the patient was five years
d, memories of profound childhood interests in
mestic activities such as cooking, bedmaking, and
e recollection of conscious phantasies of being a
oman by preference, etc. This additional material
early points to the interrelation between the pa-
ent's recent trauma, his childhood experiences and
npressions, and the basic infantile (unconscious)
stration wish.

Incidentally, this interpretation rendered intelli-
ble many of the subjective feelings and ideas that
e patient developed at the onset of his depression.
e said, in narrating his story, that he had felt him-
lf a cripple who could no longer walk erect, he
ared he had become an imbecile, and referred to
mself as having "strength without hands." All
ese formulations are well known unconscious cas-
ation symbols.

Since the common objection raised by critics to
validate analytic interpretations of this type is to
e effect that the interpretation was "suggested"
the analyst, it may be well to state that, excepting
formal daily word of greeting and parting, the
alyst in this case had not spoken a dozen words all
ld to the patient prior to the latter's producing
e dream and all the related associations. Neither
as the patient acquainted with the castration com-
ex and its implications. Nor can the analyst be
cused, as is frequently done, of having constructed
artificial interpretation by "selection" of associa-
ons, thus making the dream analysis an artefact
oduced by his analytical technic. For, as may be
ted, it was the patient who introduced the castra-
on theme, and who, impelled by forces unknown
himself, followed the thread against diminishing
sistance to the final understanding thereof.

For the sake of completeness one more element in
e dream, not touched upon by the patient himself,
ay be explained in the light of general psychoanaly-
cal knowledge. The patient showed no inclination
discuss the giant upon the occasion of the inter-
etation of the dream, and no explanation of this
gure was offered him lest it be premature. But
e giants in dreams is a typical father symbol. The
ream, then, corresponds to a phantasy of castration
the hands of the father. Now, children regularly
corporate the doctor into the father image. Thus
e remarkable effect of the genitourinary surgeon's
onouncement becomes understandable. The doctor
father) pronounced the patient venereally diseased
astrated). This bit of psychoanalytical recon-
ruction was substantiated by subsequent dreams
d free associations of the patient.

During the treatment the castration phantasy was
produced in the transference to the analyst in an
mistakable form. Early in the course of the analy-
s the patient spontaneously formulated the belief
at his heterosexual activities would be curtailed
the analyst. This notion was colored by a curi-
sly ambivalent emotional tone, part wish, part fear.
he patient stated he hoped that he would be able,
the analyst's behest, to rid himself of an urge as
troublesome as the sexual one forever; yet he sensed
a lurking fear lest he regret the irrevocable renun-
ciation of this pleasure source at some future time.
Now, the patient's phantasy of being restricted in the
exercise of his masculine functions by the analyst
represented in his unconscious what it would prac-
tically be equivalent to in effect, namely, a castra-
tion, while his fears were indicative of his resistances
against this phantasy. His thoughts and feelings on
the subject, as revealed by his free associations,
clearly disclosed the infantile (unconscious) castra-
tion wish as it was faithfully recast in terms of the
relation between patient and analyst, or, technically,
in the transference. The patient feared (wished)
that the analyst or doctor (father) might deprive
him of the use of his virile powers (castrate him).
Since sexual abstinence is, at times, actually imposed
by the analyst, it might be well to point out in passing
that the patient was wholly ignorant of the existence
of any such procedure in psychoanalytical technic.

It is beyond the aim and scope of this brief paper
either to discuss more than the one unconscious fac-
tor herein described, by virtue of which an acute
Neisser infection was able to operate as a serious
psychic trauma, or to indicate therapeutic results,
for, needless to say, other important mental factors
were present, and a discussion of the latter, without
which the rationale of the therapy would not be
apparent, would entail the exposition of an entire
analysis and would lengthen this article beyond prac-
tical limits. Suffice it to have demonstrated and ex-
plained, from a psychogenetic standpoint, the most
important psychological factor in the case and to
draw attention, in closing, both to the likelihood of
an analogous psychogenesis of early behavior ano-
malies in lues, independent of organic central nerv-
ous system changes, and to a common ground herein
exemplified upon which the interests of the genito-
urinary specialist and the psychoanalyst meet.

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Effects of the Arsenobenzol Treatment of Syphilis on Liver Function.—The investigations of H. MacCormac and E. C. Dodds (*British Medical Journal,* December 22, 1923) induce the authors to believe that the arsenical substances may be safely employed in full doses without any considerable chance of causing temporary or permanent damage to the liver tissues. The jaundice observed in syphilis, whether following arsphenamine administrations or otherwise, should be attributed to a special effect of syphilis on the liver. Two facts, however, appear to challenge the complete acceptance of such a hypothesis. The first is the well known observation that the administration of arsenic for various conditions in individuals free from any syphilitic taint may be followed by jaundice; the second is concerned with the occurrence of groups of cases of jaundice or acute yellow atrophy in seeming epidemic form among patients being treated for syphilis with arsenical compounds. In the latter case the suggestion has been made that some additional infection is present and that persons suffering from syphilis are liable to infection of this kind. Allowing full value to these observations, it can be maintained that the arsenical substances may be safely employed.

Practical Therapeutics

LARYNGEAL TUBERCULOSIS AND ITS TREATMENT*

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As it is undoubtedly true that one learns by his mistakes, I, as have many others, went through all the time honored methods of treatment of this discouraging complication of pulmonary tuberculosis. But if one is honest with himself and of an analytical turn of mind, after having had the advantage of a large service such as the Montefiore Hospital offers, it becomes almost a moral duty to draw the sum total of an experience extending over almost two decades in the observation and treatment of tuberculosis of the larynx.

While the treatment of pulmonary tuberculosis can show some positive results, as the artificial pneumothorax, I regret to state that the therapeutic efforts in laryngeal tuberculosis have been rather disappointing in spite of a number of publications of optimistic tone. The only explanation of the splendid results to which some writers lay claim may, in my opinion, be based on the assumption that they do not draw a close line between inflammatory conditions complicating tuberculosis of the lung and real tuberculous lesions of the larynx. Primary tuberculosis of the larynx I have not seen once in almost twenty years of close observation. When a case seemed to be primary, either physical or skiagraphic examination of the chest showed an old healed lesion of the lung.

Laryngeal complications of pulmonary tuberculosis are not all of a tuberculous nature. We see in some cases a chronic laryngitis and tracheitis with intensely reddened mucous membranes. The degree of intensity of the inflammation is not at all in direct proportion to the degree of pulmonary involvement. In some instances of pulmonary tuberculosis there is sudden loss of voice due to paralysis of one of the vocal cords caused by a compression of the nervus recurrens by enlarged mediastinal glands or an apical pleuritis.

I also have seen cases of pachydermia laryngis and one case of rhinoscleroma. I have not observed carcinoma of the larynx as a complication, and only few cases of syphilitic manifestation in the organ in question. In some instances the nonspecific laryngitis leads to superficial loss of epithelium, which opens the way for infection by tuberculous sputum. We shall soon see superficial ulcerations involving the subepithelial tissue with infiltrations extending into the deeper layers. These ulcerations are covered with tenacious mucus, which the patient can cough up only with the greatest effort, and the removal of which with a cotton pledget is almost impossible. In case of infection by the blood or lymph current, we do not find ulcerations but submucous infiltrations which extend deeply into the submucous area and even into the intrinsic muscles and cartilages and joints of the larynx.

*Read before the Yorkville Medical Society of New York, October, 1922.

Another form of tuberculous lesions in the larynx is the tuberculomata, which clinically can scarcely be differentiated from ordinary papillomata. The seat of predilection is the plica interarytenoids, but they also occur on the vocal cords. The prognosis depends on the type and location of the lesion.

Tuberculomata, the socalled cockscomb situated on the plica interarytenoids, I have seen disappear spontaneously with an improvement in the pulmonary tuberculosis and the general condition. In other instances I have seen tuberculomata remain stationary for years. If they grow very large or are situated so as to prevent coaptation of the vocal cords, they produce hoarseness or even dyspnea, but never pain.

Pronounced infiltration of the epiglottis, especially if there is a perichondritis present with ulceration, causes agonizing pain in swallowing, the pain radiating into the ear of the affected side, as in the act of swallowing the tongue pulls the epiglottis backward to cover the aperture of the larynx. As the patient under such circumstances is not able to swallow sufficient nourishment, his resistance suffers and he succumbs rapidly to the disease. Such cases rarely last longer than three to six months.

Infiltration of the posterior part of the larynx, the plica, the arytenoid cartilages, false or true vocal cords, or ulcerations in the same region, while they make the prognosis unfavorable do not lead so rapidly to a fatal issue. The patient becomes hoarse through infiltrations of the true vocal cords preventing proper closure during phonation, or the infiltration may become so enormous as to necessitate tracheotomy on account of threatened asphyxia.

There is one form of lesion which occurs in the form of a general armourlike thickening of the entire mucous membrane of the larynx, with few subjective symptoms.

The treatment of nonspecific inflammation of the larynx and trachea is the usual one of astringents and inhalations. These cases do not yield readily to this mode of treatment, and often a change of climate will show results when weeks or months of local therapy have been without success. The treatment of tuberculous ulceration with lactic acid has not been successful in my hands; in fact, I often had the impression that it stimulated the process, produced sloughing, and did more harm than good. Tuberculin benefits local conditions by its action on the general condition of the patient. Examining a whole series of cases after injection with tuberculin, I have not seen a single case which showed a local reaction in the larynx.

Passive hyperemia, according to Bier, is not practicable in the treatment of tuberculosis of the larynx. Even if we constrict the patient's neck to such an extent that his face swells and becomes blue, the resistance of the deep neck muscles prevents the constriction of the deep cervical veins. I have not seen in a single instance a local passive congestion of the mucous membrane.

As in pulmonary tuberculosis, climatic and dietetic treatment is our mainstay. Patients with tuberculosis of the larynx do best in rather low and dry

limates, such as Arizona. An important therapeutical help is enforced silence. It is remarkable how even progressed lesions of the organ will recede or become stationary as long as the patient is willing to undergo the ordeal of absolute disuse of his voice.

Surgical treatment of tuberculosis of the larynx is in almost every case contraindicated, especially in any case where there is an active process in the lung, in the presence of fever. The same holds good for electrocautery. Only when dealing with a small circumscript lesion in an old pulmonary case, or where the pulmonary lesion has come to a point of quietude and fever has been absent for some time, may some form of surgical treatment or deep puncture with electrocautery be attempted.

Heliotherapy has recently had some very enthusiastic and optimistic advocates. I mean the treatment with Alpine light. When in Davos, Switzerland, the renowned place for the climatic cure of tuberculosis, I visited some of the best known sanatoria with the idea of finding out what they were doing with the Alpine light treatment in a place where they would not have to substitute the artificial light for the real thing. To my surprise I found it actively used only in the Dutch sanatorium, its use having been discontinued in the German sanatorium and Dr. Turban's place.

Dr. Sontjes, director of the Dutch sanatorium, says that they treat their larynx patients according to indications and use the light treatment only as an adjuvant. He believes that mild cases react favorably to treatment or even are cured, and the extensive forms with infiltrations and ulcerations are apparently not benefited. During the many years of my observation I have seen mild cases recover spontaneously. There is also the doubt in my mind whether these mild lesions were really tuberculous. Dr. Sontjes uses an apparatus constructed by himself.

The sunlight strikes a square board in front of the patient who is in a half reclining position. This board has a square opening in its centre. On each side of this opening are two little swinging doors with mirrors which the patient adjusts so that he can see his throat. Then he is taught to introduce a laryngeal speculum so that he can see his larynx. As soon as he has learned to do that, he has to hold the mirror in position and let the light shine in as long as he can control the mirror. While such treatment is almost impossible in institutional work with patients of low intelligence, it may be of advantage to patients in private practice with proper cooperation. But if we come to light treatment of cases on the sea level, we have to substitute some form of artificial light for the Alpine light. In Vienna I visited the heliotherapeutic department of Professor Hajek's clinic, where I had an interview with Dr. Witte who is in charge of that department. He had the same experience as the man in Davos—mild lesions get better, more severe ones do not. He uses an apparatus similar to Dr. Sontjes, but uses also the direct method of throwing the light into the larynx while doing suspension laryngoscopy. He also treats only mild cases, as suspension laryngoscopy is distinctly contraindicated as soon as there is a deep involvement of the larynx structures. The trauma of suspending the weight of the body on the inflamed and infiltrated tissues would outweigh any possible benefit to be derived from the heliotherapy. The treatment of tuberculosis of the larynx should not be aggressive, only palliative.

For the intense pain of swallowing, we should give the patient before his meals an emulsion of orthoform or propaesin as advocated by Freudenthal.

Menthol	10.0
Olei amgygd. dulc.	30.0
Vitelli ovi	Two yolks
Orthoform	12.5
Aqu. dest. q. s. ad	100.0

This is administered by means of the Yankauer dropper, which the patient is taught to introduce himself. He gets enough relief by this procedure to be able to take enough food to prevent starvation.

Another method of relieving the pain in swallowing is the injection of the superior laryngeal nerve with alcohol. Only a small proportion of the cases are successful, but in these instances the patient might be relieved for days or weeks. The following is the technic as described by Hoffman:

One and one half c. c. of ninety-five per cent. alcohol is injected into the fossa above the thyroid cartilage about half an inch outward from the highest point of the cartilage. The needle is introduced straight downward or slightly toward the medium line. If you strike the nerve a sticking pain is felt in the ear on the same side through irradiation of the auricular branch of the vagus nerve. Any surgical operation in the nose, pharynx, or larynx ought to be avoided, as I have seen repeatedly tuberculosis of the larynx following such procedure.

As we find in the vault of the pharynx in pulmonary tuberculosis very frequently tubercle bacilli, it can be easily understood why the infection can be carried by open bloodvessels to the neighboring larynx.

While this thesis is of only negative value, it teaches one point: not to endanger your patients' chances by doing too much. Or as the Nestor of our medical fraternity once said: *Ne nocere.*

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Ventriculography as an Aid in the Localization of Intracranial Tumors.—Adams A. McConnell (*British Medical Journal,* November 3, 1923) states that in his hands, ventriculography when properly performed has given definite and accurate information regarding the position of intracranial tumors. It must never replace clinical methods, but in certain cases it is indispensable. It is not without danger, but no treatment or lack of treatment is without danger in cases of intracranial tumor. Ventriculography is not simple, it is not to be attempted without a sound knowledge of the anatomy and physiology of the central nervous system. It requires much patience and minute attention to details. Above all, it must be performed with what appears extreme slowness. If a competent neurologist cannot localize an intracranial tumor by clinical means, it is reasonable to put the possibilities—and the risks—of this method before the patient. It is also reasonable to assume that the risks will diminish with increasing experience. The alternative to accurate localization is death.

Historical Medicine

The Antiquity of Gout

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Gout—that riddle of the ages—upon which so many physicians, from time immemorial, have expended their dialectic skill. I say time immemorial, for gout is, in truth, hoary with age, as ancient as civilization. It enjoys the distinction of being the first joint disorder to achieve clinical individuality.

Thus, three centuries before the birth of Christ, the pioneer priest physician Hippocrates enunciated his classical aphorisms on gout to his disciples in the Temple Asclepion, in the Island of Kos. Many of his dicta, too, have stood the corroding test of time, and one cannot but admire the vividness and accuracy with which the Father of Medicine depicted the salient features of gout. Nor was gout, even in those days, merely a matter of academic interest, for apart from the writings of physicians, the works of philosophers, historians, and satirists abounded with allusions to the disease.

Thus Cicero, writing before the dawn of the Christian Era, describes the excruciating tortures of gout —*Doloribus podagrae cruciari*—and the peculiar burning character of its pains—*cum arderet doloribus podagrae.*

In the first century again, we find Ovid the Augustan poet lamenting that his gouty chalk stones defied the art of medicine, while in the second century, Lucian poured out his contempt on the various quack nostrums vaunted as cures for gout, even in those remote ages.

Nor can we marvel at the widespread interest evoked when we recall that the ravages of gout in the Roman Empire in the third century, were such that the Emperor Diocletian, by an edict, exempted from the public burdens those severely crippled thereby.

I cannot help thinking that we have here a blatant illustration of political pandering to national vice. For Diocletian can hardly have been ignorant of the fact that two centuries before, Pliny and Seneca deplored the growing prevalence of gout. They recalled that it was almost unknown in the early more virile days of the Empire, and roundly and prophetically declared that it was a sign of their impending decadence, clearly attributable, as it was, to riotous living and debauchery. Surely, in this we have a striking proof that gout is the nemesis that o'ertakes those addicted to luxurious habits and dietetic excesses. But if this be true, it is fortunately, no less certain that nations, like individuals, when they fall on hard times, lose their gout.

Thus the Arabs, at the zenith of their medieval empire, were extremely prone to gout, but their descendants, the hardy nomads of the desert, are almost exempt from its ravages. Is it not significant, too, that during the recent great war, the incidence of gout in this country diminished rapidly?

As to the antiquity of gout in our own country, we know that it was extremely prevalent in the Anglo-Saxon period. A matter for regret, but not for astonishment, when we recall their coarse gargantuan feasts, washed down with huge draughts of ale, and sack and the well spiced Hippocras.

In short, from these remote times onwards, through the Middle Ages, up to the present day, an almost continuous series of historical records testify that not only has gout always been with us, but also that its clinical characters throughout the ages have remained unaltered, conforming always to the primitive type.

But, in justice to our forefathers, it must, I think, be granted that the frequency of gout in ancient times was probably overestimated. This conclusion is, I think, inevitable, when we recall that it was not until the middle of the seventeenth century that even acute rheumatism was differentiated from gout. Can it be questioned, too, that a large percentage of the cases of gout, in those bygone times, consisted of undifferentiated infective forms of arthritis? Syphilis and gonorrhea must have existed then, as now, and their specific forms of arthritis. Surely, too, they, like ourselves, must have suffered with pyorrhea and other infective disorders which we know to be frequently followed by arthritis.

In short, the differentiation of arthritic disorders was then hardly in its infancy, and it is in the light of this disability that we must appraise the clearly extravagant claims of the older physicians as to the prevalence of gout in their day.

GOUT THE HONORABLE DISEASE

As I have just said, it is certain that the frequency of the occurrence of gout, in former days, was overestimated. This because, owing to ignorance, it became, so to speak, the dumping ground for a whole medley of joint disorders which we now know to be wholly distinct from gout. But apart from the meagre knowledge of the older physicians, another factor that contributed to swell the number of victims to gout was the absurd delusion that to have the gout was highly creditable, and a mark of good breeding. We may well smile at our forefathers, but I can assure you that the absurd delusion is not wholly dissipated even today. We all recall the story of the old Scottish gentlewoman who would never allow that any but people of family could have bona fide gout. If one of her servants perchance aspired to this privilege, she scouted the very idea. "Na na," said she, "it is only my father and Lord Gallowa', that hae the regular gout!"

As to the origin of this mistaken ambition, I cannot help thinking that it was the outcome partly of the fact that gout was a malady chiefly met with in

ersons of exalted station—among the great and ealthy—and alas, often those of intellectual disnction. Statesmen, warriors, literary men, and oets loom large among its victims. Lord Burleigh uffered greatly therefrom and good Queen Bess n that account, always bade him sit in her presence, nd was wont to say, "My Lord, we make much of ou, not for your bad legs, but for your good head." The great statesman, Pitt, suffered atrociously ith gout, and Horace Walpole was particularly anoyed that he developed it. As he plaintively writes, If either of my father or mother had had it, I nould not dislike it so much. I am herald enough o approve it, if descended genealogical, but it is n absolute upstart in me, what is more provoking had trusted in my great abstinence for keeping it rom me. But thus it is."

In truth, some of the most illustrious of our coun-rymen were martyrs to gout—Milton, Dryden, Linaeus, Newton and Fielding, and I may add that hysicians, too, enjoyed no immunity. The great Harvey was tormented with gout, and was wont to reat it after the most heroic fashion. He used to o with bare legs on to the leads of his house, sometmes in midwinter, and then proceeded to soak them n a pail of icy water, until he nearly collapsed from old. (Caleb Hillier Parry.)

Again, John Hunter was similarly plagued, not to nention the distinguished Dr. Sydenham who, however, consoled himself with the pithy reflection that out destroys more wise men than fools.

In short, the frequency with which gout figures n the life history of some of the ablest men in all ges, is most remarkable. Hence, I fear, the complacency with which lesser men often without good eason, affect to have the gout!

Imitation is the sincerest form of flattery: and ow potent, the power of fashion! The desire to ape, not only the tone and manners of the higher orders of society, but their very infirmities. This ignoble ype of flattery reached its climax in the case of courtiers, and provoked the scorn of Samuel Butler who, n his *Hudibras,* tells us that courtiers were accusomed to wear garnitures on the toes of their shoes, o justify their pretensions to the gout. Here, I may remind you, that Louis XIV of France, once suffered from fistula in ano, and to gratify the insatiable vanity of this monarch many of his courtiers pretended that they were similarly afflicted.

But lamentable to relate, men who claimed to be intellectuals were not immune from this vice. Thus, Plato was somewhat deformed, one of his shoulders being slightly higher than its fellow, and his disciples, in admiration, padded their shoulders in imitation of their master's deformity. Again, Aristotle suffered with an impediment in his speech, and his pupils forthwith started to lisp.

In the light of these facts, one can scarcely marvel that even today, patients claim to have the gout, and are by no means pleased when they are contradicted. Women, especially, hold tenaciously thereto; even those of austere type, clinging to the taint handed down to them from some far off ancestor, whose "superfluity of naughtiness," as St. Paul termed it, was a byword among his generation.

But, apart from the fact that to have the gout was to be in the fashion, there was a widespread fallacy that gout conferred immunity from all other disorders, and moreover, favored longevity. I may remind you that a certain Archbishop Shelldon is said, not only to have longed for gout, but actually to have offered £1,000 to any one who would procure him this blessing. For he regarded gout as "the only remedy for the distress in his head."

Indeed, in the early part of last century, we find Dr. Heberden deploring the fact that people are "neither ashamed nor afraid of it, but solace themselves with the hope that they one day shall have the gout. Or if they have already suffered it, impute all their other ailments not to having too much gout, but to wanting more." Naturally, in view of this widespread delusion that, if you had the gout, it would drive away all other evils, and ensure you long life, it is hardly a matter for surprise that misguided persons deliberately courted a fit of the gout, by resorting to excess and intemperance.

But alas, the unpleasant fact remains, that gout does not ensure freedom from other maladies, and if you present yourself for insurance, you will find that your premium, instead of being lower, is distinctly weighted, if you are predisposed to gout.

Tempora mutantur, nos et mutamur in illis.

Leonardo da Vinci, the Anatomist and Physiologist

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Leonardo da Vinci was the most wonderful man hat Florence, that city of wonderful men, ever proluced. In the first place, he was the most illustrious llegitimate ever born, although the roll of those born nder the bar sinister contains some remarkable ames. Leonardo was also the most versatile genius he world has seen. While his fame rests on his aintings, he excelled in almost all branches of cience, and forestalled some of the most startling nventions of modern times. His work as a man f science was essentially that of the individual. He vorked out problems by himself. He sketched a machine by which a man could walk under water, but said that he would not divulge it "because of the evil nature of men, for they would use it for murder at sea by sinking ships together with those in them." He described the invention of a taxicab and breech loading cannon, and was engaged by the notorious but able Cesar Borgia as his Master of Ordnance. Of his mechanical investigations the most astonishing were directed to the solution of the problem of flight, and he left behind a series of sketches illustrating the gyrations of birds in the air. He was acquainted, too, with the idea of the parachute.

Leonardo's knowledge of medical science was deep and accurate. He made experiments in biology and his observations thereon were astounding in their prescience.

His most notable work, however, was done in the realms of anatomy and physiology. He dissected numerous bodies with infinite care, and for many organs his drawings and records were closer to facts than any anatomists were able to turn out until the nineteenth century. His anatomical drawings are among the most treasured possessions of the King's Library at Windsor Castle, and others of his manuscripts relating to science are at Holkham Hall, Norfolk, England.

In the department of physiology, he was most brilliant, and anticipated in some respects the discoveries of the immortal William Harvey. It is said that Leonardo da Vinci was within an ace of discovering the circulation of the blood.

Undoubtedly, as stated previously, da Vinci was the most versatile genius in the history of the world. He excelled in everything he took up, but had he not been so versatile, he might have been the greatest painter of any age. He painted a few masterpieces, when his insatiable craving for knowledge impelled him to seek new fields. However, he possessed the scientific mind even more perhaps than the artistic bent, and it also appears that the study of what were then considered mysteries of the human body attracted him more powerfully than any other study.

Leonardo was born perhaps before his time, but was the pioneer in many branches of knowledge, and after all, the time and place in which he lived was better suited to the individualistic deep thinker than the restless noisy age in which we live. Florence, too, when the Medici ruled, was the Mecca of artists, who received greater honor and respect than in any place before or since. In the realms of intellect, Leonardo da Vinci was a prince among his peers, but he was also endowed with the solitary spirit of true genius.

Contributors to the Science of Medicine

ANTONIO SCARPA

In his volumes of charming biographical sketches entitled *Disciples of Æsculapius*, Dr. Benjamin Ward Richardson, F.R.S., writes: "In my early days as a teacher, during an examination in physiology on the subject of the fluid of the membranous labyrinth of the ear, I asked a student the question, 'Who was Scarpa?' And the reply came as fast as it could be spoken, to the amusement of the whole class: 'The man who invented the triangle.'" Thus so many famous men are known and distinguished by a name or a word, sometimes characterizing them truly, sometimes not; yet this designation clings to them through the ages, although their other contributions to life may have been much greater and more valuable.

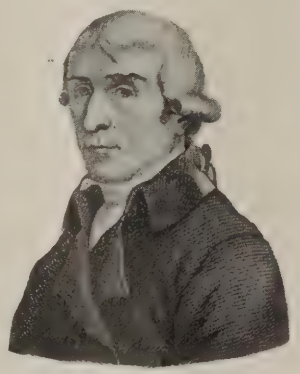
Scarpa described more clearly than any one of his predecessors the triangle formed by the sartorius muscle and the adductor longus, and suggested the operation of tying the femoral artery at the apex of the triangle, and so, to all anatomical students. he is known as the man of Scarpa's space or Scarpa's triangle, and in spite of the fact that this was by no means his best or his most practical work.

The date of Scarpa's birth is variously given, the year ranging from 1748 to 1752; the place was Motta, a little village in the Austrian Tyrol. His parents were poor tradespeople, but an uncle, having become a priest and educated himself at the monastery, undertook to transmit his learning to young Antonio and succeeded in interesting and inspiring the boy to such a degree that he prepared himself, in spite of great poverty and other almost insurmountable obstacles, for the University so that he was ready at the age of fourteen to enter the School of Medicine at Padua. At twenty-two, he was elected professor of anatomy at the University of Modena, and at thirty-seven he was appointed to the chair of anatomy and clinical and operative surgery at the University of Pavia, at that time probably the world's centre for the scientific study of anatomy. This university is considered by some authorities to be the oldest in Italy, tracing its origin from the time of the great Charlemagne. Scarpa's classes here sometimes included as many as two thousand students at a time.

Pavia was also one of the great centres of that time for culture, learning and art, and the abode and visiting place of many wealthy and prominent people from many nations, so the young surgeon was able shortly to build up for himself a large and lucrative practice, and to make a name for himself that was known in all the capitals of Europe. He amassed a large fortune, for his early days of poverty and a natural thriftiness, called by his enemies penuriousness, had taught him the value of money and how to save it.

Scarpa was a connoisseur and collector of art treasures, with which he furnished his residence, a veritable palace, at Pavia, and many of which may now be seen in the museum in that city. He was one of those few great men who have attained wealth, friends, fame, and a brilliant reputation and have lived to see and enjoy them. He died at the age of eighty-two, worn out from five years of torture from renal calculus and chronic inflammation of the bladder. During the latter part of his life, his sight failed so that he became almost blind. He never married, most of his interest and affection seeming to have been centred in a pupil, Jacopi, to whom he played the part of father until the former's early death, which affected Scarpa so greatly that he temporarily gave up his teaching. Another person who influenced greatly his life and career was the great Morgagni. Scarpa was so ardent and capable

a student at Pavia that, during his second year at the university, he was appointed assistant demonstrator under Morgagni, then very old and almost blind but still in possession of his remarkable intellectual faculties. The old man soon made the youth his secretary, and the latter, through reading to his master from contemporary medical literature and recording his case histories, received an invaluable training. Morgagni personally conferred upon him his medical degree from Pavia University, and recommended him as his successor there. The great pathologist later died in the arms of this beloved pupil and friend.



ANTONIO SCARPA

Scarpa worked also with Calza, professor of midwifery, and fashioned for him many of his wax models; he made a tour of Europe with Volta of electrical renown. He was a friend also of Alexander Brambilla, surgeon to Joseph II, Emperor of Austria, and the personal physician to the Emperor Napoleon I. Francis I decorated him, and Napoleon conferred upon him the Cross of the Legion of Honor and the Order of the Iron Cross. He had also many prominent friends among the faculties of the universities of Paris, London, and the cities of Austria and Germany, where he did some of his work.

He was a prolific writer and the author of many essays, memoirs and longer works on anatomy, surgery and physiology. He was also so accomplished an artist that he made the originals of all the illustrations for his works, some of which are considered even now the best anatomical plates ever published. Most of his books were written during his vacations, at his country house, for he was never idle. He had a wide acquaintance with all literature, both ancient and modern, and spoke several languages. He preferred the Latin language as a medium for conveying his scientific opinions and always delivered his lectures in it.

Scarpa was so eloquent and erudite, as well as able and successful as a practitioner, that his presence and services were widely sought, both at home and abroad, by scientific societies as well as individuals. Once when the Empress of Francis I was suffering from a malignant disease, although Italy and Austria were at war, Scarpa was sent for by the Emperor to treat his wife, and, under a flag of truce and with a military escort, crossed the Tyrol, cured the Empress, and returned under the same conditions to Italy.

Among the things besides his "triangle" for which Scarpa is known in medicine were his discovery that muscular structure is also supplied with nerves; the invention of many operations on the eye, descriptions of which have been translated into English by Dr. James Briggs; and he laid the foundation for much of our present knowledge of aneurysms, neurology and hernia. He himself considered his work on the last subject as his masterpiece. He discovered also the membranous labyrinth, and the nasopalatine nerve, was the first to regard arteriosclerosis as a lesion of the inner coats of the arteries, and the originator of iridodialysis. He made a model shoe for club foot which is still used by orthopedists. Many authorities consider his greatest work to be the magnificent *Tabulæ Neurologicæ*, giving the first proper delineation of the nerves of the heart.

Scarpa's career illustrates how much can be done with slight clinical material properly used. In his time, the population of Pavia did not exceed twenty thousand, and the hospital where he worked had only three hundred beds divided among half a dozen clinics.

The portraits that have come down to us show a face the characteristic of which is firm resolution and determination coupled with unusual refinement. Some of the incidents of his life reveal this independence of opinion and spirit. When in 1796 the Transpaduan Republic was proclaimed, Scarpa refused to take the oath of allegiance to the new government, and so was deprived of all his university appointments. He took the matter calmly and practically in that it enabled him to give more time to scientific and literary work. When Napoleon heard of his dismissal, he was very angry that politics should have been allowed to interfere with the work of so great a scientist, and ordered his immediate reinstatement.

Scarpa has been described as tall and well built, with a square but powerful frame, lithe and enduring; his eyes were large and black and as piercing as an eagle's—"microscopic, telescopic, from which nothing in the range of medical vision could escape"; nose finely modelled and strongly set; lips firm and compressed. His speech was animated and fluent and his voice sonorous. He had a vigorous constitution and was an ardent lover of nature and outdoor sports and occupations. This was probably one of the secrets of his vigorous and healthy old age. He was reserved almost to austerity in manner, and simple, straightforward, and direct in all his dealings and relationships. Richardson writes: "It were difficult to imagine any sick person doubting Scarpa. Look at him and live—or die."

Social Aspects of Cancer.—As long ago as 1792, John Howard, a London physician, in a letter addressed to the governing body of the Middlesex Hospital, gave the principal points of the social aspect of cancer. Considering the date of this document, it may be interesting to quote Howard's conception of the aims of his work: 1. To give permanent aid to the sick, who, by reason of the seat of the disease, or its advanced stage, cannot be saved by operation or by other means; 2. to receive the sick, who, by an operation, may be relieved, improved, or cured; 3. to establish outpatients' consultations for such cases as may be advantageously treated without hospitalization; 4. to collect all observations on the sick and to permit anyone to use the scientific documents thus accumulated; 5. to try new methods of treatment, provided these present sufficient guarantees of harmlessness; 6. to undertake scientific research into the causes and nature of cancer. Is it not surprising that more than a century later our views have not changed?—*World's Health.*

Editorial Articles

ERYTHEMA OF MALARIA

Erythema is one of the frequent manifestations of malaria, being encountered in both mild and severe cases of any type, also in malaria cachexia. The eruption may develop during full evolution or in the latent phases of the infection, and with or without visceral lesions. The presence or absence in the blood of the specific organism of malaria seems to have no influence on the erythema, and this applies likewise to the type of plasmodium. This skin manifestation has been met with in cases originating in Europe, Africa, and Asia.

Malarial erythema usually occurs in successive outbreaks, at an interval of several weeks or months. As long as the malarial organism is present in the body, pink tinted maculæ may appear, scattered over the trunk and limbs. The eruption may be fleeting, lasting only a day or two, but usually it persists for two or three weeks, with total or partial retrogression, while the color of the maculæ becomes bright or dull at different times of the day. Then the eruption suddenly disappears, or it may subside progressively. In mild cases of malarial erythema, before the eruption has completely disappeared, a few extremely pale pink maculæ still being present, a new outbreak may occur, composed of numerous maculæ becoming confluent, after which the cycle recommences.

The erythema may involve the entire body, except the neck, face, and palmar surface of the hands and feet. It has, however, a predilection for certain regions, such as the sides of the thorax and abdomen, thighs, knees and elbows. It is composed of small unequal maculæ, often round or oval, but they may be irregular in shape with uneven borders. They vary in size from a pinhead to a lentil, and are never raised, invariably remaining in the macular state.

The eruption never gives rise to general symptoms. There is no pruritus and no desquamation; it simply appears, goes through its evolution, and subsides. In color, the maculæ vary from bright red to pale pink; sometimes they are a light lilac, occasionally they are violet tinged or violet in hue. In subjects with malarial melanodermia, the maculæ become impregnated with pigment, and become light yellow, brown, or even bronzed, but no matter what the tint may be they are always discrete and not always easy to detect. The maculæ are pale in the evening, and in winter this phenomenon seems to be more marked, unless the deposit of a pigment makes the lesion indelible. On the other hand, the heat of the bed or of the sun favors the development of the color, rendering it more distinct. The pressure of a finger causes the macula to become effaced; when the pressure is removed, it again becomes apparent, due to hyperemia or a simple vasodilatation.

Another phenomenon, likewise due to a disturbance of the vasomotor innervation, is the presence of Sergent's white line, which appears when the skin surface is lightly brushed over with a fingernail. In some cases of malaria the application of the entire hand on the skin will leave a white imprint, which progressively subsides. This erythema is a result of the disturbance of the vasomotor innervation due directly or indirectly to the plasmodium. Its diagnosis is easy; its morphological and topographical characters differentiate it from other eruptions, and its presence may sometimes lead to the detection of malarial infection that had been unrecognized.

DISEASE DANGERS FROM DOGS

The more important diseases which in temperate climates can be carried by dogs to man, writes Dr. Cameron in a recent issue of the *Lancet,* are tuberculosis, rabies, skin diseases, parasites, and various intestinal worms. Many dogs, especially in large towns and cities, suffer from tuberculosis. Abundant opportunity is offered for contracting it, especially in cows' milk and butchers' refuse, but the most frequent source of the disease in dogs is man. This means that the tuberculous should not be permitted to have pets, since it is the simplest thing in the world, not only for the pet dog to contract the disease, but also to hand it on to persons.

Rabies is usually confined to dogs and is spread chiefly by dogs. The tendency of the mad dog to run long distances adds greatly to the danger. The first symptom of the disease is a marked change in disposition, and, even at this stage of the malady, the saliva is infectious and the virus, penetrating a broken place in the skin or mucous membrane, can communicate the disease to man. "As a measure against this disease, all dogs in England are subject to six months' quarantine under conditions controlled by the Department of Agriculture. It is always preferable to confine a dog for observation rather than to destroy an animal suspected of rabies. The dog which started the epizoötic in England is supposed to have been smuggled in by air."

The dog can have four kinds of ringworm and three kinds of mange, two of the latter being transmissible to human beings. The two kinds of lice that

live on dogs cannot live on man, but several species of dog fleas live also on humans. The most important nematode occurring in the dog is Tozascaris limbata, the eggs of which are easily ingested by humans who are careless in handling dogs. Another type of round worm often causes rabiform fits in puppies. Several types of flukes found in dogs occur also in man.

Two of the tapeworms found in dogs, the double pored tapeworm and the minute Echinococcus granulosis, are most dangerous to human beings. The former grows to a length of twelve to fourteen inches and passes its cystic stage in the biting louse and in two species of fleas. A single insect may contain fifty larvæ. If an infected insect is swallowed by dog or man, the tapeworm develops to its full size in about a month. As many as 238 have been found in a single host. The most dangerous of animal parasites of the dog is the echinococcus, the cause of hyatid cysts. The minute larva makes its way through the intestinal walls into the blood and it carried to a suitable organ, frequently the liver, where it develops into the bladder worm. The cyst is exceedingly dangerous as it may attain the size of a child's head. "The infection in man can come only from the dog—from badly washed vegetables, from the hands, from the dog's mouth, etc. The dog in turn can be infected only through carelessness in the disposal of infected meat by uninformed persons. This danger is probably the greatest that is run by man from the dog as the symptoms in the infected animal are at the most vague and often absent; and there is no Pasteur treatment available. . . .

"The remedy is to treat the dog as a dog and not as a human being. He must be kept free of parasites, and all ailing animals in the household where tuberculosis is suspected should be sent to be tested."

THE HONOR OF THE GOUT

Gout is one of the most ancient diseases of civilization; indeed, according to Ewart, it is as old as civilization itself. On the other hand, while definite and unequivocal evidence has been found that osteoarthritis existed in Egypt in 1300 B. C., no hint is given in the writings of Greek and Roman medical men that the disease was recognized as a distinct entity, as a joint disorder, different from others of the same class. As a matter of fact, it seems unlikely that gout was known to any extent among the notoriously hard working Egyptians or the Romans of the Republic or the Greeks in the days when "Spartan" was a byword for abstinence and sparse living.

Gout, at any rate in its acute form, is largely the outcome of luxurious living, consequently it may almost be taken as a signal that the nation is approaching the stage of decadence. In the Rome of the later empire or in Greece of the same or an earlier period, when the people were permeated with riotous living and saturated by sensuality, gout was rampant. In England, the disease was known in the earliest times. The Anglo Saxons were gross living people, addicted to the pleasures of the table—great meat eaters and heavy drinkers of beer and mead. Gout is indeed an ancient disease in Great Britain, where two or three hundred years ago, *Morbus Dominorum,* as the name implies, was an honorable distinction. It was esteemed as a selfevident mark of good breeding. Certain it is that many great men were martyrs to this honorable disease, not only in Great Britain, but in Europe and America as well. The most celebrated example was Pitt, the first Earl of Chatham, who when suffering from one of his periodical severe attacks, rose from a sick bed and died almost in the House of Commons itself, when thundering against the war of independence.

A curious fallacy has always existed in respect to this disease, namely, that it confers upon its sufferers freedom from other diseases and insures long life. As Dr. Llewellyn points out in his work on gout, a certain Philander Misaurus, issued a brochure entitled *The Honour of the Gout,* purporting to be written "right in the heat of a violent paroxysm," and was published for the common good (1775). "Bless us," he says, "that any man should wish to be rid of the gout; for want of which he may become obnoxious to fevers and headache, be blinded in his understanding, lose the best of his health, and the security of his life." And forthwith in his zeal for the common good, he gives us the following implication: "Blessed Gout, most desirable Gout, Sovereign Antidote of Murdering Maladies, powerful corrector of Intemperance, Deign to visit me with thy purging Fires, and throw off the Tophous Injury which I may have suffered by Wine and Wit, Too hard for the virtue of a Devotee upon a Holy Festival. But fail not thy humble suppliant, who needs thy Friendly help to keep his tottering Tenement in order; Fail him not, every Vernal and Autumnal Equinox."

Gout is regarded as a jealous occupant of the human tenement, brooking no interference by other disease. This belief, albeit unwarranted by facts, has died hard; really it is not yet completely dead. The truth is that so far from being a disease tending to long life and conferring immunity, it cripples and devitalizes the system, rendering it open to attacks from other maladies and shortening existence. But, and this point should be emphasized, although one may be descended from gouty forbears, and therefore susceptible to the disease, it does not follow that the honor of the gout will be conferred upon him.

The Nemesis of those predisposed to the affection came about only by selfindulgence. Abstinence and plain living will hold the disease in abeyance. The severe forms of gout, seldom met with nowadays, occurred in those who indulged too freely in the pleasures of the table, and especially in those who drank too much ale and heavy wines such as port. Some hundred years ago men drank two and three and even four bottles of port wine nightly. It was fashionable to do so, and the consequence was that acute gout was fairly common. It was unknown, however, among men who lived temperately and earned their daily bread by the sweat of their brow. The moral of this is: Avoid the "Honour of the Gout" by living temperately and abstemiously, if of a gouty predisposition.

WOMEN IN MEDICINE

On October 12, 1874, the London School of Medicine for Women came into existence, and it may be said that the Royal Free Hospital, to which it is attached, is the only hospital in Great Britain in which all the students and the majority of the staff are of the female sex. In October, then, this medical school will celebrate its fiftieth jubilee. The celebration, which is to be on a wide scale and of a dignified character, takes the fact into full account that the opening of the medical profession to women marked the beginning of all the notable advances that have come since. At that time the doors of all the professions in Great Britain were closed to women. Hence it has been decided that the central feature of the celebrations shall be a service of thanksgiving at St. Paul's Cathedral. There will also be a festival dinner on October 24th, for which the Corporation of the City of London is granting the favor of the use of the Guildhall. At this dinner the company will include men and women representative of politics, of all the great social work of the city itself, and of art and literature. It is intended, moreover, that the speakers shall be of special importance and brilliancy. Several other functions of a less dazzling kind will take place, and in fact, every effort will be put forth to render the commemoration of the first women's medical school in Great Britain fully worthy of so epoch making an event.

It will be quite in place here to sketch briefly some of the incidents connected with the history of women in medicine in Great Britain. It is interesting to recall that the first British woman doctor, and if a mistake is not being made, the first woman to take a degree of medicine in America, Dr. Elizabeth Blackwell, succeeded in obtaining in 1858 the degree of M.D. from the University of Geneva. Therefore, the honor of granting medical degrees to women really belongs to this country. Doctor Blackwell, on account of having an American medical degree, was able to lay claim to a place on the British Medical Register and practised both in London and in this country. In 1865 Miss Garrett, afterwards better known as Dr. Garrett Anderson, passed all the examinations in medicine of the Society of Apothecaries, then the only medical body which granted medical licenses on qualifications to women, but still failed to receive official recognition.

Four years later Miss Jex Blake, Mrs. Thorne, Miss Chaplin, Miss Pechey, and Mrs. deLacy Evans made a determined onslaught on the University of Edinburgh, but had to endure numerous rebuffs and disappointments, and even litigation, ere they reached their goal. In the meantime, a sufficient number of women had offered themselves to teach to demonstrate that the time had come for a women's school of medicine to be established. A sum of £6,500 was forthcoming, and many famous medical men of half a century ago, among them Professor Huxley, were ready to give ungrudging support and thus the project was launched under favorable auspices. During the first three years some thirty-four students entered the school, not knowing how or when their degrees would be won, until in 1877 the King's and Queen's College, Dublin, decided to admit women to final examinations, provided that they held already the degrees of Berne or Zurich. At about the same time Dr. Septimus Buss had brought a resolution before Convocation of the University of London in favor of admitting women to its medical examinations. At the present time women in Great Britain have no difficulty in becoming medically qualified, and most of the medical schools admit them as students.

The Royal Free Hospital is full to overflowing; at Charing Cross Hospital there are as many women as men students; and in all the medical schools and hospitals to which women are admitted, more women have asked for admission than there is room for. So far as ability and aptitude for medical and surgical work are concerned, women are quite equal to men. Indeed, their average ability is said to be higher than the average ability of men students, while they are more persevering. They shine in examinations, and it is whispered that men are inclined to be somewhat jealous of the manner in which girl students assimilate medical and surgical knowledge. They fill staff and house appointments at hospitals wherever open to them with the greatest credit and are peculiarly well fitted for research work and for inspectorship of schools and factories.

It has been contended that women are not suitable for general practice, as the life is too hard and wear-

ing, but when the work that women did in the war at the front and at home is considered, this argument will hardly admit of close analysis. At the front in the Balkans, the Scottish Women's Surgical Unit, under Dr. Elsie Inglis, did strenuous work, while one of its members, Dr. Louise McIlroy, who is now director of the Obstetrical and Gynecological Unit at the London Medical School and Royal Free Hospital, amply demonstrated her skill and knowledge and her ability to undergo the hardest work under trying conditions, by becoming after leaving the Scottish Women's Unit, the head of a hospital in Salonika, and during the first year of the armistice being in charge of a hospital in Constantinople. Of course, however, there are numerous examples of women doctors during the war undergoing vicissitudes and hardships, both at the front and at home.

In the cursory consideration of women in medicine, the progress made by American women has not been alluded to. British women are especially referred to in this respect, because the coming commemoration of the fiftieth anniversary of the first women's medical school in Great Britain is made the text upon which this article is based. There is no country in the world in which women in medicine have made more progress and have so fully demonstrated their ability to hold their own in competition with men than in the United States. Of course, as in all professions and trades, in this age of acute competition, it is a case of the fittest that survive, and the law of nature is applicable to both sexes in medicine as in any other human endeavor. The celebrations soon to take place in London are a conspicuous proof of the survival powers of women in medicine. In some branches of medicine and surgery, women excel; in other branches men are in the front; but there is room for all, and especially at the top.

HEALTH AND MENTALITY

That great scientist and ruthless iconoclast, Karl Pearson, has recently been studying the relationship of health to psychical and physical characteristics of children and has given us some interesting and valuable conclusions as to his findings. The four thousand children studied were from four to nineteen years of age and in middle class English schools, and the data were evidently handled in a superior fashion.

As to the age of the school child and his health, Pearson finds that there is little connection. That *on the average* the health of the child of four will not be sensibly modified as he grows older. There has probably been much exaggeration about the idea that children grow stronger with age."

As to certain traits: conscientiousness, selfconsciousness, shyness, and temper (sullen, quick, or goodnatured), he finds these do not change much with age or education. In habits of quietness or noisiness or in their degrees of vivacity, boys become quieter and girls grow somewhat noisier with age. He believes this is due to physiological changes taking place in the teens.

In handwriting he finds little or no change in that of the boy, but, on the average, a sensible drop in the quality of girls' handwritings occurs with the coming of puberty and the emotional changes it involves. The relation of athletic qualities to intelligence he finds significantly marked. It is the intelligent rather than the slow or dull who exhibit athletic prowess.

With regard to the charge of evil influence of games on English public life, he says that it is real enough but that it has been brought against the wrong people. The athletic boy is, on the average, healthier than the boy who is not good at games, he is fairly conscientious, if a somewhat assertive and undoubtedly noisy child. "He is in several respects better, in none worse, than the average child. The stress should be laid on the folly of those nations and sections of nations who spend their leisure not in training muscle and mind to cooperate, but in looking on while others perform."

He does not find that any bodily measures show much relationship to health and he thinks "even the importance of *actual* weight—as distinguished from changes in weight—has been much overestimated as a factor of health. . . .

"Nature selects for physique and she selects for intelligence, but her selection in the past has been rather an alternative, than a combined selection. The eugenist desires a selection which will combine both.

"Taking an all round view of the matter, it is surprising how small is the relationship of general health to the psychical characters. It would seem that far too much weight has been attributed to the health factor in dealing with mental characteristics. I believe a large part of this exaggerated view of health has been due to its study in public elementary schools. In such schools apparent health may not represent hereditary health; that may be modified by defective environment, by want of medical care and even deficiency of food. . . . It is the parent, not the teacher, who provides the metal: all the teacher can do is to give it an edge and temper it.

"Beneath the ceaseless flow of life the feeble mind of man catches now and again some glimpse of deep biological purpose in the universe; he sees it mid the shifting vortices of the flood only too obscurely. Nature does not work through man but on man;

and she works not with his ineffectual tools, but with her own allpowerful machinery. She made, by variation, by inheritance, and by ruthless extermination, the moderately amiable, the moderately intelligent man of today out of an untamed and mordacious precursor. Is it not blind audacity for man to claim that by aid of his puny, if undoubtedly useful, little polishing tools, such as education and medicine, he can achieve as much in a school life as Nature with her omnipotent mechanism has taken in all probability a million years to produce? If man would throw himself into sympathy with Nature's purpose, let him appreciate to the full extent the potency of her methods, and endeavor as his slender strength may permit to use her tools."

NEW MEDICAL PERIODICALS

The worldwide interest of the medical profession in the subject of cancer and its causation and prevention has been recently evinced in the publication of another new periodical, the *Journal of Cancer,* a quarterly issued in Dublin by the Cancer Research Fund of Ireland. The first number was published in January of this year, and contains articles by Pilger, in charge of the electromedical department of the Dublin Skin and Cancer Hospital; Crofton, lecturer on pathology at University College, Dublin; and Wintz and Rumpf, of the Erlangen Clinic, Bavaria. An editorial in the journal states that it is the intention of the editors to make it "as far as possible a complete and accurate record of all the most recent developments of cancer in regard to its cause, treatment, and cure." Contributions from specialists in all parts of the world are invited.

Another new publication, which issued its first number in April, is the *American Journal of Physical Therapy,* of which Dr. Charles R. Wiley is editor. The subjects covered by the articles in this periodical will include hydrotherapy, radiotherapy, electrotherapy, heliotherapy, radium therapy and thermotherapy. An editorial note states that "this journal is primarily for the benefit of the man in the field, who, in the last resort, is the man that wages and wins the war against disease and death. . . . The all-important need of the practitioner is to be kept in constant touch with the leading workers in all portions of the field, and furnished with practically up to the minute, ready to use information which he can immediately translate into his practice. This is the sort of material which we propose to disseminate through our reading pages. We intend to make them a clearing house of all the best that is being thought out and accomplished by the leaders in physical therapy throughout the world which has a genuine working value for the practitioners of medicine." The journal is a monthly published in Chicago by the Professional Press.

The *Review of Clinical Stomatology* is the title of a third magazine which has recently begun publication. The editors are Alfred Asgis, D.D.S., of New York City; Dr. George W. McKenzie, of Philadelphia; Dr. William G. Shemeley, also of Philadelphia, and Walter B. Veazie, Ph.D., of the University of Colorado. The journal is to be issued monthly as a supplement to the *Journal of Ophthalmology, Otology and Laryngology.* The purpose is, as stated in an Apologia by the editor in chief, "to give some small impetus to the movement to make stomatology and dentistry a specialty of medicine in fact as well as in name, as some think it to be, and to encourage the extension of graduate instruction which will impart to the mouth surgeon the technic and knowledge which has been acquired by general surgery."

CANADIAN SOCIAL HYGIENE REPORT

The final report of the medical committee of the Canadian Social Hygiene Council on the Standardization of the Diagnosis and Treatment of Venereal Diseases has recently been issued by the Department of Public Health at Ottawa. The intention is to place a copy in the hands of every practising physician in the country. This report, a pamphlet of more than twenty pages, covers the following phases of the venereal disease problem: Medical research and laboratory questions, including licensing of men doing Wassermann tests and standardization of methods of making these tests; diagnostic tests in syphilis by demonstration of treponema palladium; significance of Wassermann reaction; negative Wassermann reaction and precautionary measures; Wassermann tests in connection with the treatment of syphilis, especially as an evidence of cure; treatment of syphilis and relative value of arsenicals and nonarsenicals; eligibility of marriage; minimum requirements of treatment; treatment of syphilis, including early primary cases and dark field; Wassermann positive, secondary, tertiary, and latent syphilis; hereditary syphilis; early preventive treatment; gonorrhœa; treatment of acute urethritis; complications of gonorrhea in the male; chronic gonorrhea; pelvic gonorrhea; gonorrhea in the adult female and treatment; and gonorrhea in children.

The report recommends that all laboratories, including those of universities, doing Wassermann tests, be licensed by and under the supervision of the Provincial Board of Health, and urges that private, university, hospital, municipal, and provincial laboratories, in the use of these tests, adopt recognized methods so as to approach uniform results for the purposes of comparative study.

The report is an important document, well worthy the attention and study of physicians and health officers in the United States.

News Items

History of Science Society.—A new organization is being formed to encourage the study of the history of science, and to afford a common meeting ground for scientists, historians, and philosophers. David Eugene Smith of New York is acting as corresponding secretary.

Association Meetings.—The American Psychoanalytic Society held its annual meeting at the Hotel Traymore, Atlantic City, on June 3rd. A feature of the meeting was a paper by Dr. Otto Rank, of Vienna.

The American Psychopathological Association will meet in Philadelphia, June 7th, at the College of Physicians.

The American Therapeutic Society will meet in Toronto, Canada, June 6th and 7th, at the Academy of Medicine.

Rockefeller Institute Director.—Dr. Francis Gilman Blake, of the Yale Medical School, has been elected to the Board of Scientific Directors of the Rockefeller Institute, to fill the vacancy created by the death of Dr. Hermann M. Biggs.

Medical Films.—The Society for Cinematographic Instruction in Medicine and Surgery, with headquarters in New York, announces that after two years intensive experimentation, it is ready to produce films for the medical, surgical, dental, drug, and allied professions.

National Committee for Prevention of Blindness.—At the recent annual meeting the following officers were elected for the coming year: President, Hon. William Fellowes Morgan, New York; vice-president, Dr. F. Park Lewis, Buffalo; and secretary, Miss Winifred Hathaway, New York.

Mental Hygiene Legislation Committee.—An advisory committee on legislation has been appointed for 1924 by the executive committee of the National Committee for Mental Hygiene, largely as a result of frequent requests for a model commitment law. Dr. L. Vernon Briggs, of Boston, is the chairman.

Doctor Simmons Retires.—Dr. George Henry Simmons, now in his seventy-third year, for twenty-five years editor of the *Journal of the American Medical Association*, has requested to be retired. A banquet is to be held in his honor at the Congress Hotel, Chicago, on June 9th, during the meetings of the Association.

American Gastroenterological Association.—At the recent annual meeting the following officers have been elected to serve for the ensuing year: President, Dr. Arthur F. Chase, New York; vice-presidents, Dr. Charles G. Lucas, Louisville, and Dr. Frank Smithies, Chicago; secretary, Dr. John Bryant, Boston; and treasurer, Dr. Clement R. Jones, Pittsburgh.

Dental Research at Mellon Institute.—Dr. C. C. Vogt is the incumbent of the new industrial fellowship of the Mellon Institute, established by E. R. Squibb and Sons of New York, and devoted to the study of the chemistry of preventive dentistry. Doctor Vogt has been a member of the Mellon Institute for the past ten years. Reports of the studies will be published from time to time.

X Ray Infections.—Dr. Frederick H. Baetjer, professor of roentgenology at Johns Hopkins Medical School, has recently undergone his fiftieth operation to remove infections caused by x ray burns. Doctor Baetjer has been suffering for many years from injuries received in his research work, and this last operation was performed in an attempt permanently to check the infection.

Physiotherapy.—The Beekman Street Hospital announces that it is opening a complete department of physiotherapy, in connection with its industrial accident service, to carry on work similar to that done by the Reconstruction Service in the Army, Public Health Service, and Veterans' Bureau. The department is under the supervision of Dr. Norman E. Titus.

Western Physiotherapy Society.—At the annual meeting of this association, held at Kansas City, the following officers were elected: President, Dr. L. A. Marty, Kansas City; first vice-president, Dr. R. W. Fouts, Omaha; second vice-president, Dr. W. P. Patterson, Springfield, Mo.; secretary, Dr. Charles Wood Fassett, Kansas City; treasurer, Dr. W. P. Grymes, Kansas City; registrar, Dr. H. A. Spilman, Ottumwa, Ia.

Distinguished Foreign Visitors.—Prof. John Sendziak, of Warsaw, Poland, read a paper on Problems in Otology and What Poland Is Doing Toward Their Solution, as guest at the last meeting of the Section on Otology of the Academy of Medicine.

Dr. Nils H. Heitman, chief tuberculosis officer of the Norwegian Government, and Dr. Germund Woigin, professor of hygiene at the University of Upsala, Sweden, are in this country as guests of the Rockefeller Foundation, to study public health work.

Dr. Vera Scantlebury, chief physician of the Victorian Baby Health Centre, of Australia, is in New York studying health centres.

Scholarships for Postgraduate Study.—Applications may be made to the New York Postgraduate Medical School and Hospital for scholarships for graduate study in medicine on the Oliver-Rea Foundation.

Framingham Demonstration.—Dr. Ralph V. Matson, of Portland, Oregon, has been invited to report on the Framingham Tuberculosis Demonstration at the International Health Conference at Wombley, England.

Heroism Medal.—Dr. Harry M. Archer, honorary medical officer to the New York Fire Department, is to receive the James Gordon Bennett medal for extraordinary heroism, the highest honor the Fire Department can bestow. The award was won through the rescue of two laborers caught under tons of debris, after ten hours' duty.

Dr. Dutton to Establish a Research Laboratory.—Dr. W. Forest Dutton, medical director of the Hospitals of the Graduate School of Medicine, University of Pennsylvania, has resigned. He will continue his research of the effects of certain therapeutic agents administered intravenously. He will establish a laboratory in Northwestern Texas for the investigation of the etiological factors of pernicious anemia and other blood dyscrasia.

Veterans' Bureau Appointment.—Dr. Edgar O. Crossman, Manager of District No. 1, U. S. Veterans' Bureau, has been appointed acting medical director, to succeed Dr. L. B. Rogers, who has been placed in charge of U. S. Veterans' Hospital No. 41, at New Haven, Connecticut. The new manager of District No. 1 is Col. Elon F. Tandy, who has been serving as Executive Officer of that District; he will be succeeded by Col. William E. Sullivan.

Personals.—Dr. Lewis A. Conner, of New York, was elected president of the Association of American Physicians at its recent Atlantic City meeting. Dr. Alphonse R. Dochez of New York and Dr. George F. Dick of Chicago were awarded lectureship prizes at this same meeting.

Dr. H. B. Platt, of New York, was elected treasurer of the National Tuberculosis Association, at the meeting held in Atlanta.

Dr. Charles Gordon Heyd was guest of the Ohio State Medical Society on May 15th, and presented a paper on A Review of Some Recent Work on the Surgical Physiology of the Gastrointestinal Tract, with Special Reference to Socalled Chronic Appendicitis.

Dr. E. V. Cowdry, of the Rockefeller Institute for Medical Research, has sailed for South Africa, to spend a year at the Transvaal University College in the study of the life cycle of protozoa causing diseases of domestic animals.

Civil Service Examinations.—Examinations will be held by the United States Civil Service Commission for the following positions: Physician, Grade A. neuropsychiatry, one vacancy at $3,000, four vacancies at $1,800 with quarters and subsistence at West Roxbury, and one or more vacancies at $1,800, with quarters and subsistence, at Northampton; Physician genitourinary diseases, vacancy at Boston, salary $1,500, part time; physician, orthopedic surgery and prosthetics, vacancy at New Bedford, $1,200, part time; acting assistant surgeon, röntgenology, New Haven, $3,000; medical examiner, Veterans' Bureau, Hartford, $3,500. Applications will be received up to June 30th.

The Civil Service Commission of New York State lists the following examinations: Assistant in School Medical Inspection (Physician) State Education Department, full-time, salary $3,000; Specialist for Eyes and Ears (Physician), State Education Department, full time, salary $3,750. Applications will be received up to and including June 14th.

New Clinics.—Those interested in the increase of dispensary service will be gratified to learn of many new clinics which have been opened. Some of these are here listed: North Eastern Dispensary, a clinic for malignant diseases; Fifth Avenue Hospital, clinic for hay fever and asthma; New York Hospital, a pay clinic for infants and children, the excess of costs to be financed by the James Brady Buchanan Foundation; Reconstruction Hospital, an industrial hygiene clinic under the joint auspices of the Industrial Hygiene Division of the State Department of Labor, the Reconstruction Hospital, and the College of Physicians and Surgeons; New York Hospital, clinic for nervous and mental disorders.

A GREAT HUMAN REPAIR SHOP

LEONHARD FELIX FULD, LL.M., PH.D.

New York.

HUMAN REPAIRS

We all know where to go when our watch is in need of repairs or when our automobile is broken down; but when the most wonderful piece of machinery in the world—our body—needs repairs our ignorance is appalling. After a delay which is usually long and dangerous we consult our own physician. He may be able to help us or he may refer us to a hospital. In either case our machinery will be repaired but we will in either case be left too weak to go back to work. And many of us who are in need of repairs really need neither medical nor hospital treatment. What we need is the kind of repairs every human machine needs after it leaves the hospital as cured. Where is there a repair shop for such human machinery?

A GREAT HUMAN REPAIR SHOP

There is at White Plains, the county seat of Westchester County, New York, within convenient motoring distance of New York City, the greatest human repair shop in the world, where at all times 150 men and 150 women are being restored to health and to selfsupport, without fee, charge, or expense of any kind. This great human repair shop was established through the farsighted benevolence of a great capitalist about ten years ago. This man who lived to the ripe old age of ninety-seven and accumulated many millions of dollars in the shipping business and in railroad building left his entire fortune for the establishment of this great human repair shop, which he established as a memorial to his mother. He had never been married and had lived with his sister to whom he was tenderly devoted. The methods employed in this repair shop are most effective and should be known to every one.

ADMISSION

Men and women are admitted to this repair shop on the recommendation of a hospital in the city of New York. Private physicians, large employers of labor, and others also have the privilege of recommending to the institution those in need of its benefits, but most of these men and women are recommended for admission by one of the great New York hospitals. No applicant is accepted unless it seems likely that the institution can restore that individual to selfsupporting independence. He must be a working man in the sense that he is dependent on his own labor for support, but children and housewives are also freely admitted. No patient is admitted who is suffering from any contagious ailment nor is anyone admitted who is suffering from an ailment which renders him obnoxious to others. There are no other restrictions. Each application for admission is carefully scrutinized by a competent trained nurse who is the institution's chief of admission bureau. Applicants tentatively accepted by the chief of the admission bureau are required to report in person at the New York City office of the institution where they are examined and if accepted taken at once, in a large motor ambulance carrying about forty persons, to White Plains. His first contact with the institution impresses the guest most favorably in two respects: the thoughtfulness of the management in providing each person with a light nourishing meal of peanut butter and hot cocoa before the ride begins and the remarkable courtesy, efficiency, and consideration shown by the motor bus driver in his solicitous care of those entrusted to him.

ASSIGNMENT

Upon arrival at White Plains each guest has his temperature and pulse recorded by a trained nurse, is given a meal of crackers and a cup of coffee and is assigned to a room in one of the six homelike cottages which constitute the institution. The guests leave New York at about one o'clock, arrive at White Plains at about two thirty, and are ushered into the dining room by a guide for their first meal at five o'clock. With their assignment to a permanent seat in the dining room the repair process of the institution is begun. All that preceded were only preliminaries.

DIET

The feeding of the guests at this institution is in the hands of a young woman who is the most competent dietitian I have ever known and I have selected and met professionally scores of women occupying positions of this kind, some of whom made a most favorable impression upon me. She is not only thoroughly equipped for her duties from a professional point of view, but she combines with expert professional knowledge an earnestness and zeal which serve to make the important feeding department of this institution its most successful department. The food furnished the guests is of the highest quality. It is pleasantly varied from day to day. It is admirably adapted to the varying needs of the physical and mental infirmities of the guests. It is delightfully laxative in character. It is unlimited in quantity, that is to say, each guest may have as much food as he desires of the dishes which are considered the basic dishes at each meal, such as potatoes, green vegetables, bread, coffee and the like. The food is excellently cooked. It is appetizingly and expeditiously served. These statements do not narrate what the management expects and what is sometimes found to exist. The dietitian is present in the kitchens and in the dining rooms at every meal and looks after the quality of the food, the quality of the service, and the conduct of the guests in the dining room with such zeal and efficiency that not even the slightest deviation from the ideals which have been described is permitted at any meal. It is small wonder that with such efficient feeding under such ideal conditions most of the guests gain rapidly in weight during their stay in this repair shop. Those guests who, because of erroneous methods of eating before coming to the institution, or because of false notions regarding their dietary needs, are at first slightly dissatisfied with the omission of special diets, such as an abundance of eggs or of milk or of chicken or of broth, are urged to omit one or two meals and are then tempted by the appetizing manner in which the food is prepared and served to become the greatest boosters of the dietitian who is undoubtdly this insti-

tution's most valuable asset next to the director himself. She is literally worth to each guest her weight in gold.

DAILY ROUTINE

The guests are required to be in their beds each night with their lights out at nine o'clock, when the guest designated to fulfill this function comes to each room and bids each guest a cheery good night. At six thirty each morning this guest arouses the others with a cheery good morning. From six thirty to seven thirty the guests are encouraged to walk about the spacious grounds to whet their appetite for breakfast, which is served at seven thirty and usually consists of a cereal, an egg, as much bread, butter and coffee as each guest may desire, and some prunes. At eight o'clock each guest must make his own bed in such a manner as to pass the inspection of the trained nurse. From eight to ten thirty the guests are encouraged to play games in the open air, and from ten thirty to eleven thirty they must work, as will be explained in detail later. From eleven thirty to twelve thirty is again devoted to outdoor play and recreation. Dinner consists of meat, bread and butter, tea, an abundance of vegetables and a dessert, and is served at twelve thirty. From one o'clock to two o'clock every guest must rest in bed. From two o'clock to five o'clock is again devoted to play in the open air. Supper is served at five o'clock and usually consists of vegetables, bread, butter, cocoa, a dessert and cake. From five thirty to nine o'clock is again devoted to recreation and at nine o'clock the day is ended with lights out and to bed and the same cheery good night of the guest assigned to be the host in each cottage.

DISCIPLINE

The daily routine shows that this repair shop is frankly institutional rather than homelike, and this institutionalism is one of its most efficient aids to effective repair of human ills. Irrespective of what you, in your ignorance, may wish to do, you must conform to what has been proved by experience to be best for all. From the first examination which the director gives each guest on the morning after his arrival the guest is made to feel that the director is the disciplinary fountain head of the institution, just as the recruit in the army is made to feel that the colonel is the disciplinary fountain head of the regiment. Those who refuse to obey any rule of the institution—the institution has remarkably few rules and all of its rules are most reasonable and such as a wellbred guest would unconsciously follow without any regulation—is given by the director peremptorily twenty minutes in which to leave the institution and return to the city. In the minds of the guests the director is to use their own language "The Twenty Minute Man" and every guest stands at all times in dread of getting this sentence of twenty minutes. This gives to the institution, which has guests of every nationality, every creed, every social condition, every pathological condition, almost every nervous condition, and almost every kind of temperament, the disciplinary background without which it could not function successfully.

KINDLY TREATMENT OF GUESTS

That the director is not as stern as the guests believe him to be, and that the sternness which he shows is assumed by him for disciplinary reasons and is not inherent in his nature, is apparent to the critical observer. In the first place every official of the institution, every employee of the institution, and every guest exercising authority over other guests treats each guest with the utmost consideration, kindness and courtesy. Never is a harsh word spoken to a guest by anyone under any circumstances. Not even the director speaks harshly to any guest, except that the guest to whom he gives twenty minutes in which to leave the institution, may construe this as a harsh sentence, although it is never said in the heat of passion but in the form of a command from a superior officer acting in a case requiring discipline. This uniform kindly treatment of the guests cannot be ascribed to the spontaneous efforts of the members of the staff. It must be the result of specific instructions and constant supervision by the director. This shows that his natural disposition is as kindly as his outward assumed manifestations to his guests are stern. This sternness is evidently assumed for the best interests of the institution and its guests. This view of the director's true character is confirmed by the opinion of those who knew him twenty years ago, when as a young man he was considered the most efficient hospital superintendent in the city of New York in the days before Dr. Goldwater, Dr. O'Hanlon or Dr. Winfield Smith were heard of.

WORK

Practically no medicine is given to the guests in this institution who are undergoing needed repairs. Those who have had recent operations have their wounds dressed as often as may be necessary. The trained nurse in charge of each cottage is also authorized to give the guests such medicines as may be required by each to relieve constipation, cough, and the like, but the amount of medication is negligible. The medicines of this repair shop are good food, good air, rest, recreation and work. As soon as in the opinion of the director the physical condition of the patient will permit, he is assigned to some work about the institution. For the more delicate this work may consist of basket making or cement working, or picking up papers on the lawn or lawn mowing and for stronger guests it may consist of farming or trench digging. Everyone who in the opinion of the director is physically able to do any work must work one hour a day or he is peremptorily given twenty minutes to leave the institution. The work is carefully adjusted by the director to the physical condition of each guest and is looked upon as a part of the repair treatment and not as being for the benefit of the institution. It can readily be seen that it is not for the benefit of the institution, because if the maintenance of each guest were considered worth only fourteen dollars a week the institution would be paying each guest at the rate of two dollars an hour for such work as picking up papers or weeding on the farm an hour a day, which is a prohibitive rate of pay for work of this kind. Furthermore, the guests work only five days a week instead of six or seven.

RECREATION

In addition to good air, good food, rest and work, each guest is given as part of his repair process recreation which is of two kinds—individual recrea-

tion and mass recreation. By means of frequent tournaments with prizes to the winners, and personal encouragement by the director of occupations and by guests who are qualified by experience to undertake such work, each patient is encouraged to play croquet, tennis, golf, pool, baseball, hammer throwing, bowling and similar outdoor games which have been carefully modified to meet the needs of men and women undergoing repairs. Those who are not sufficiently strong to engage in any of these games are encouraged to lie in the hammocks, to take walks about the grounds, and to stay out of doors as much as possible. The mass recreation consists of dancing and amateur entertainments every Monday, Wednesday and Friday evening from seven to eight thirty. The guests perform at these entertainments, the performances consisting of recitations, singing, dancing, magic, dialogues and such other entertainment as the guests may be capable of giving. This entertainment is volunteered by the guests under the supervision and direction of the director of occupations who is a charming entertainer of the true hostess type.

LIBRARY

The institution also has a library from which the guests may draw books for reading during idle hours. The selection of the books is not particularly good nor is the library kept in a most efficient manner. Inmate labor has been used almost exclusively in its administration and it seems that no trained librarian has been a guest at the institution in many years. On the whole the comparative inefficiency of the library is an asset of the institution. Too much reading is not good for guests in need of repairs. Being outdoors with mind free and body active is of much greater benefit to them. Furthermore the New York daily newspapers are furnished in liberal quantities to the guests each morning and each evening and these are ample facilities for all the reading which guests of this kind should be encouraged to do.

MOST EFFICIENT ORGANIZATION

When a guest who entered this institution as a frail human derelict is ready to go home fully restored to health and to gainful occupation at the end of a stay of from two weeks to a month or longer, he is prepared as the result of his experience in this repair shop to declare with fervent thanks that this is the most efficient organization with which he has ever come into contact. He has been restored from a weak helpless member of the community, dependent temporarily upon his relatives or upon charity for support, to a strong selfsupporting member of the community again able to work and to enjoy life. He thanks from the bottom of his heart John Burke for establishing at White Plains, N. Y., the Winifred Masterson Burke Relief Foundation as a memorial to his mother. He will cherish to his dying day the firm belief that this is the most useful institution in the city of New York—a repair shop where selfsupporting men and women may without one cent of cost be restored to full health and duty. God bless the soul of John Burke and of his mother, Winifred Masterson Burke, and grant long life to Dr. Frederick Brush, director of the Burke Relief Foundation.

28 WEST 128TH STREET.

Foreign Correspondence.

LONDON LETTER

(From our own correspondent)

LONDON, *April 4, 1924.*

KING EDWARD'S HOSPITAL FUND

The annual meeting of the General Council of King Edward's Hospital Fund for London was held in London on April 1st. The report of the president was encouraging. The gap between income and expenditure, taking the London hospitals as a whole, is closing year by year. For the year 1920 which was the worst year of all, the gap, omitting all special distributions, was £353,000; for 1922 it was £174,000, and it is expected that the gap for the year 1923 will be very nearly closed. This, however, does not mean that the hospitals are in sound financial position. They will still have to keep up their income at a figure nearly two and a half times more than it was before the war and they also have constantly to adopt the latest improvements and extend their work, in order to keep pace with the needs of the patients and the developments of medical science. Then again, the figures referred to are aggregate figures, and, while there is this steady general improvement, there are a good many individual hospitals that still have deficits, and at some of these the financial position continues to give rise to anxiety. It may be said that every effort is being put forth to develop the business side of hospital administration. This has always been a weak spot in the working of the London hospitals. As the late Sir Napier Burnett pointed out in his last report of the provincial hospitals of England and Wales, the organization of the hospitals outside London has always been more economical than that of the hospitals of London itself. Tables included in the statistical report showed three things: 1. The increase of voluntary contributions in spite of postwar difficulties; 2, the growing importance of the contributions made by patients themselves either directly or through mass contributions; and 3, the varying proportion in which the aggregate surplus or deficit is divided among the different hospitals or groups of hospitals.

THE CARE OF STREET CASUALTIES

The report of the special committee of King Edward's Hospital Fund on the disposal of accident cases and cases of sudden illness occurring in London has also been issued. The following recommendations were made: 1. That King Edward's Hospital Fund, in making its annual grants, should take into consideration whether hospitals which deal with cases of accident or sudden illness occurring in streets or public places provide, first, a reasonably sufficient number of beds for such cases; second, a reasonably sufficient number of observation beds, or beds attached to the casualty department, in order to avoid, as far as possible, transfer to another institution of any patient whose condition might be likely to be prejudiced by such transfer. 2. That it be represented to the police and ambulance authorities that no institution which is not equipped for the reception and treatment of serious cases of accident or illness should be retained on the list of institutions

to which ambulance cases should be in the first instance taken, and that it be suggested to the authorities that, in drawing up the list of such institutions, the cooperation of the Ministry of Health be sought in cases of infirmaries, and of King Edward's Hospital Fund in the case of hospitals. 3. That it be represented to the Ministry of Health, in the case of street accidents or sudden illness brought to Poor Law institutions, including removals from the casualty department of a voluntary hospital, first, that no question of residence of the patient or site of the accident, or site of the transferring hospital, should be raised prior to reception and treatment; second, that no such cases should be transferred to another institution if their condition might be likely to be prejudiced by such a transfer; third, the charge for treatment of such cases should be a common metropolitan one, and not fall on the union receiving and treating such patients, and fourth, that such patients should not be subject to any disability arising out of technical pauperization as the result of their reception and treatment.

INFANTS' HOSPITAL IN VINCENT SQUARE

This, the largest infants' hospital in England, is lacking in funds necessary to carry on the work as it should be. Dr. Eric Pritchard, who was appointed director of the hospital two years ago, has been untiring in his efforts to conduct the institution on the most scientific and up to date lines and with this end in view has been earnestly endeavoring to place the hospital on a good financial basis. He has a most able coadjutor in this endeavor in the chairman of the committee of management, Sir T. J. Gomer Berry, one of the largest newspaper proprietors in the country and a master of organization. A national campaign for the saving of infant life and to secure increased support for the hospital has been inaugurated. The management committee states that at present they have "to turn away three or four applicants for admission for every one that can be taken in, a condition of affairs that can only be remedied by substantial extension of the present buildings." It may be added that the hospital, although facing the largest open space in London outside the parks, is situated on the outskirts of one of the most poverty stricken districts of London. It is well equipped for laboratory research and it goes without saying that its situation implies that it is well provided with human material for clinical investigations. As a centre for postgraduate study of infant diseases it is good in all respects and may be recommended to American medical men visiting London for postgraduate study.

REPORT ON THE ACTION OF ALCOHOL

A new report on the much discussed subject of the action of alcohol on the human system has been published by the Medical Research Council of the Ministry of Health. One dominant impression is left on the individual who reads this book, that scientific explanations aside, the effect of alcohol on the ordinary man or woman, is to remove in different degrees the normal mental control over thoughts and actions usually exercised. This one fact alone, it may be said, accounts fundamentally for most of the effects of alcohol as scientists recognize them and for most of the popular ideas and fallacies connected with its use and abuse. As is now generally known, the action of alcohol is narcotic and not stimulating. It diminishes the control of the intellect and will, the higher mental functions being the first affected. It is pointed out by the committee that its value as a fuel and as a substitute for carbohydrates in the diet is of theoretical interest rather than of practical importance. No one heavy drinker, moderate drinker or abstainer is much concerned that it possesses a small food value. The points about it that are of real value and matter to the average man and woman, are the therapeutic effects of its use in pathological conditions, its absorption in the system, the effect of moderate doses, the degree of tolerance acquired by constant use, its properties in alleviating the discomforts of intense cold, its value as a sedative, its action as a poison, its effect on respiration of the heart and on the deep temperature. All these matters are discussed without bias and unlike most books on the subject, every conclusion is supported by scientific evidence. It is not a final word. That has not been said and may never be said; at any rate, there is still much to learn. Especially is our knowledge inconclusive with regard to two aspects of the subject, namely, the effect of strictly moderate drinking on longevity, and the effect of alcohol on the digestion of food. This valuable report will be referred to on another occasion in greater detail.

SCHOOL OF HYGIENE IN LONDON

The Ministry of Health announces that a Royal Charter has been granted for the incorporation of the governing body of the London School of Hygiene and Tropical Medicine, which is to be established as the result of the donation of $2,000,000 given for that purpose by the Rockefeller Foundation. It may be recalled that in 1922 the Rockefeller Foundation offered to provide a sum of $2,000,000 towards the cost of building and equipping an Imperial and International School of Hygiene to be affiliated with London University, on the understanding that the British Government should accept the responsibility of providing for staffing and maintaining the school when established. The Government accepted the offer. The Foundation then acquired a site near Gower Street. Dr. Andrew Balfour, of tropical medicine fame, was appointed director recently. The departments of the school for which provision is to be made include, 1, applied physiology and principles of hygiene; 2, chemistry and biochemistry; 2, immunology and bacteriology; 4, medical zoology; 5, epidemiology and statistics; 6, the practice of preventive medicine, general sanitation, and administration; 7, tropical medicine and hygiene. The school will provide for the training and equipment of public health officers, and for research in the various branches of preventive medicine. Its objects have been defined by Sir George Newman as follows: 1, to make instruction of university standard available in every department of hygiene; 2, to further the practice of hygiene not only in this country, and the British Empire, but in all parts of the world.

A BOOK BY PROFESSOR MC ILROY

Dr. Louise McIlroy, who is professor of gynecology at the University of London and director of the unit of obstetrics and gynecology at the Royal Free

Hospital and Women's Medical School in Gray's Inn Road, London, has written a book concerning Constantinople, published recently in London and by Charles Scribner's Sons, New York. Dr. McIlroy served throughout the war, first with the Scottish Women's Unit under the late Dr. Elsie Inglis in Serbia, afterwards surgeon in charge of an English hospital in Solonika, and lastly in charge of a hospital in Constantinople. In *From a Balcony on the Bosphorus* she gives her impressions of Constantinople during the occupation by the Allied Armies, 1919-20. It is a fascinating and gripping description of places and people told with a freshness and a vivacity that holds the attention. Dr. McIlroy has high praise for the American relief workers among the Armenian refugees and says that the American women doctors and nurses were most devoted in their care of the children.

The book from beginning to end is of absorbing interest and shows that Dr. McIlroy, together with her high scientific attainments, possesses literary gifts of no mean order. The book is of artistic design and fittingly illustrated. It may be cordially commended to American readers as an unpretentious but enlightening record of historic days in a city in which history has been made many times.

PARIS LETTER

(From our special correspondent)

Paris, *April 20, 1924.*

PARIS MEDICAL FACULTY PAY HOMAGE TO PROFESSOR DE SCHWEINITZ OF PHILADELPHIA

At the thirty-seventh congress of the French Ophthalmological Society, to be held from May 12th to May 15th at the Faculty of Medicine of Paris, a signal tribute will be paid to the noted American oculist, Professor G. E. de Schweinitz, of the University of Pennsylvania. He will be received as the guest of honor of the congress in the large ampitheatre of the Faculty and on the evening of the same day a banquet will be given in his honor over which M. Henry de Jouvenel, Minister of Education, will preside.

Professor de Schweinitz's work in ophthalmology has won him world wide fame. During the war he was on the Surgeon-General's staff in France and a member of the editorial board for medical and surgical history of the war. He has published many noted works on diseases of the eye and his researches in ophthalmology have produced many valuable results.

HEALTH RULES

In a lecture delivered at the Sorbonne to American students, Professor Carnot laid down the following health rules, which are well worth dissemination:

1. Ventilate every room you occupy. Man is not a house animal.

2. Wear lightweight, loose and porous clothing. Arrange to remove layers of outer garments when the atmosphere becomes too warm. Expose the whole body to an air bath, and if possible a sunlight bath once daily (as when preparing the toilet in the morning).

3. Get out of doors. Get out without wraps for a few minutes several times a day if possible, for the stimulating effect.

4. When resting for recreation, be sure you are not dissipating by indulging bad habits.

5. Breathe night air at night time. Open your bedroom windows. Have no fires in bedrooms.

6. Breathe deeply one hundred times each day in an outdoor atmosphere.

7. Avoid overeating or overweight.

8. Get back to nature in the matter of foods. Remember the original food products are grains, vegetables, fruits, nuts, meat, milk, eggs and water. Man's elaboration of many of these items results in concentrated food products on the one hand and deficient food products on the other.

9. Select your diet from the natural food products mentioned in the preceding paragraphs; get a certain part fresh every day (i. e., not canned, boxed or bottled); eat the whole slowly and with cheerfulness, leaving your appetite to be your guide, provided you eat slowly. Curtail your appetite on man's alterations of foods. Drop fads and foolish notions; chew well and most dyspepsia will disappear.

10. Go to stool regularly and frequently.

11. Stand, sit and walk erect, but relax frequently. While inactive avoid draughts or cooler air currents against the back, loins and thighs. Keep the feet warm.

12. Do not allow the well known habit poisons, such as alcoholic drinks, concentrated beverages and foods, or delicacies of all types, to enter the body. Give particular attention to infections, colds and sore throat in the first stages.

13. Keep the teeth and gums healthy. Keep them clean. Eat fruits at the end of meals in order to help accomplish this. Clean the teeth before going to bed. See a dentist at least once a year.

14. The secret of great personal power is work, play, rest and sleep in moderation. Never permit a piece of work, or stress of strain of any kind, to run along without frequent interruptions in the nature of relaxations.

15. Keep serene no matter what happens.

AMERICAN MEDICAL SOCIETY OF PARIS

At the monthly meeting of the American Medical Society of Paris, Dr. Thierry de Martel, the eminent surgeon of the American Hospital, gave an interesting talk on brain tumors. He illustrated his remarks by moving pictures and showed an operation performed by means of his mechanical trephine, which possesses the curious quality of cutting through the skull without possible injury to the membranes surrounding the brain.

Dr. de Martel insisted on the necessity of early diagnosis of brain tumors, so often ignored till irremediable damage has been done to the brain tissue. He paid a glowing tribute to the work of Victor Horsley in England, and to that of Cushing and Dandy in America. He described the socalled ventriculography of Dandy, who injects air into the ventricles, so that certain brain tumors become visible to the x rays and can be more readily removed.

Among those present were: Dr. Edmund L. Gros, president; Dr. L. Fuller, treasurer; Dr. F. Desmond, secretary; Drs. Chaussegros, Rothschild, Bove and Jackson, of Paris; Dr. Roy Dunbar, of Atlanta, Ga.; Dr. Frank McCauley, Portland, Ore.; Dr. J. F. Park, New York; Dr. F. L. Anton, Los Angeles, Cal.; Dr. W. M. Kraus, New York; Dr. McAlpin, London; Dr. C. F. Gelston, San Francisco; Dr. J. J. Kaplan, New York.

STATUS OF MIDWIFE IN FRANCE

The dignified and rather prosaic proceedings of the Academy of Medicine has recently been ruffled by a discussion of the standing and prerogatives of the midwife in France. Certain phases of the subject have given rise to heated discussions that are being echoed in the medical press.

The work of the French midwife is closely allied to that of the doctor. She is supposed to confine herself to the work of accouchément, but once engaged by the family for this duty, often she extends her activities to prescribing for the mother, the child and even the members of the family, to the detriment of the family physician. But it is not this feature of her activities that is the cause of the most severe criticism. The decreasing birth rate in France has engaged the attention of the leaders of the profession and inspired a great many projects in and out of Parliament for its correction. The feeling is so strong against the practice of abortion by the regularly admitted medical man that discovery of a case under his care means not only professional ruin but the courts treat the discovery without mercy and a long term of imprisonment is his sure reward. Strange to say, however, the midwife is left practically free to pursue this nefarious practice and the incredible number of abortions that occur in France can be largely attributed to her intervention, and it is this aspect of her activities that is the subject of attack and defense before the academy.

Parliament has created prizes for large families, pensions for widows with large families, and dowers for young women marrying, after they have borne three children. Professor Pinard, the former head of the department of obstetrics of the Faculty, has practically devoted his life to this subject, and is now a member of the Senate. It has been suggested to him to use his authority to secure the abolition of the midwife in France.

LETTER FROM VIENNA

(*From our own correspondent*)

VIENNA, *February 20, 1924.*

DEATHS OCCURRING IN BATHTUBS

Dr. Hermann Beer has published his experiences (he is police doctor in Döbling, near Vienna), regarding deaths which occur in bathtubs in cities. The cause of death varies greatly. With elderly men it may be due to heart block, owing to the excessive heat of the water, or the room is overheated, and consequently high blood pressure occurs, which in the presence of arteriosclerosis might easily lead to unexpected fatalities. People suffering from heart disease or nephritis are subject to syncope in the bathtub not infrequently. Some cases of carbon monoxide poisonings are also recorded. These cases were either suicides, the delinquent leaving the gas tap open intentionally, or the victim had been careless in not turning off the gas. Dr. Beer, however, reports two cases in which the cause of the mishap could be ascertained. In one case the man was being suffocated by escaping gas, but was saved by his wife, who thinking that suffocation was due to the great heat, let in fresh air. The worst of such cases is that these gases have no bad smell at all, and therefore they cannot be discovered. Two cases of drowning in a bathtub occurred in the practice of Dr. Beer, both in Vienna. In both cases the victims took the bath late in the night when they were sleepy. They fell asleep in the water and were drowned. The autopsies in both cases proved that the cause of death was in fact drowning while asleep, and all other possible causes of sudden death could be excluded.

CRIMINAL USE OF NARCOTICS

In a conference of the Vienna Forensic Doctors the use of narcotics for criminal purposes, murders, robbing, thefts, etc., was discussed. In recent times, it was stated, forensic doctors were too often consulted by the criminal court to give opinions as to the action of certain narcotic poisons. Murders with poisons have come, so to speak, in vogue, and the criminals make intensive studies regarding the application of the different poisons in practice. Not long ago a criminal poisoned his victim with digitoxin. He gave him the exact lethal dose of this drug. Another used scopolamine, and afterwards applied chloroform, to make sure of being able to rob his victim at ease. The robber had been employed in a surgical ward as a servant some years ago and therefore his cleverness in using first a narcotic which is not discovered by its odor is understood. According to the Vienna criminologists the murderers use narcotics with predilection on account of making sure themselves of defending their act with the false statement that they did not want to kill their victims, but only narcotize them. Of course the judges do not accept this defense, because the poisons are employed generally in such doses that they are apt to kill not only one but even two persons. At any rate it is surprising, said the president of the society, how quickly the criminals appropriate the achievements of chemical science. On the other hand, the easy access to chloroform, ether, and cocaine, induce criminals to avail themselves of these comfortable means of killing their victims. The Society of Forensic Doctors is going to present a memorandum to the legislature requesting that certain poisons and narcotics be placed in the hands of doctors, and only in exceptional cases where the doctor finds his patient reliable enough to be given narcotics in his hands, to write on the prescription that the poison may be handed to the patient himself.

A NEW ANTIGONORRHEIC

A new antigonorrheic remedy was introduced by Dr. Klausner, of Prague, under the name of reagon. The remedy is already beyond the experimental stage and the results arrived at in all the clinics of Prague and in some ones of Vienna are most encouraging. Dr. Klausner told about his remedy at a meeting of the Medical Society as follows: "The action of reagon is based upon the antiphlogistic and antigonococcic effect of certain glycosides." The reason for this effect is yet unknown. The experiments made hitherto with other nitrate of silver preparations have demonstrated that the application of silver salts in a greater quantity is quite impossible on account of the irritating action of silver upon the mucous membranes. In opposition to this our preparation (he

invented reagon in conjunction with Professor Wichowsky) is entirely pain and irritation proof. Reagon is a glycosidegelatine compound, which contains ten times as much silver as any other silver preparation manufactured. Despite its large silver content reagon can be used in the most intensive local treatment. Dr. Klausner claims for his preparation the following advantages: it makes possible an intensive treatment, free from danger and irritation which he hopes will shorten considerably the duration of the disease.

THE TREATMENT OF DIABETES WITH PROTEINS

Dr. Gustave Singer, a professor in the Vienna University, delivered an address before the Vienna Medical Society on a new method which it is believed will reduce the sugar content of the blood and urine. He treated an eye patient of his with protein injections, and as the patient also suffered from diabetes, he also noted the behavior of the sugar content of the urine under the administration of protein. In the case of this patient the protein injections had a decidedly beneficent action on the diabetes, inasmuch as the sugar content of the urine and blood decreased, the patient gained in weight, and her general feeling was greatly improved. The good result in this case has encouraged Professor Singer to administer a protein preparation, namely caseosan, to a great number of diabetic patients. The results were still better than in the first case because these patients were treated in the hospital, where their diet and regimen was strictly controlled. The best results were achieved in cases where protein and insulin were combined; of course in severe and advanced cases only.

EXPOSING THE FAMOUS MEDIUMS OF VIENNA

A committee consisting of nine eminent neurologists and the president, Professor Wagner-Jauregg, has been sent out to ascertain the results which were allegedly arrived at in a socalled metaphysical institute, where in the past few weeks two mediums are said to have done wonderful things. These mediums were Villy and Rudi Schneider, the former fifteen and the latter seventeen years of age, both the sons of a printer. Their greatest achievement was to cause guitars and bells to send voices through the air, to the great admiration of the Vienna public. They have lifted different objects in the air, and have done other marvellous things, so that the metaphysical institute was established for them. The medical committee has just completed its task and report that the whole thing is a swindle. The two media have worked with tricks, and in the darkness manipulated with their feet, and their knees which remained free. One of the professors understood the tricks so well that after three seances could himself perform them all. The exposing of the Schneider brothers is only the one of a series carried on in all European capitals to expose the swindle of the occult and hypnotic wonders. A man named Guzik was exposed in Paris recently, and in Budapest a man named Laszlo. The Vienna professors have stated that in the past fifty years every single occultist has been exposed. The exposing of the Schneider boys has shaken the confidence of the public in occultism.

WASHINGTON LETTER

(From our own correspondent)

Washington, D. C., *April 29, 1924.*

SMALLPOX IN THE DISTRICT OF COLUMBIA

Nineteen cases of smallpox, the largest number for several months, were reported to the District Health Department for the week ended April 5th. The outbreak began several months ago, and Dr. Fowler, the District Health Officer, has in every way stressed the necessity for vaccination if the public does not wish the disease to spread further. Fortunately, the disease has been of mild type and there have been no deaths from it. Nevertheless, it is a remarkable commentary upon the intelligence of the American people that it would permit the occurrence of smallpox in the nation's capital. No possible criticism can obtain to the Health Department, and perhaps it is better to take the position that if a person wishes to have smallpox in mild form, he should be allowed the privilege of so doing. If the disease would continue to be mild in character, and if it would only attack persons who are careless or recalcitrant about vaccination, this would be all right, but unfortunately there are many innocent children and genuinely ignorant people who are apt to contract the infection, thereby causing themselves considerable trouble and the community much money.

WASHINGTON HOSPITALS TO BE RADIO EQUIPPED

As the result of a campaign which was launched in this city a short time ago by a well known New York broadcaster and his associates, the Walter Reed General Hospital, the United States Navy Hospital and the Mount Alto Hospital are to be equipped with radio at an early date. It is planned that every patient shall have a pair of head phones and will be able to listen in at any time that there is anything in the air. The funds for the purchase of the apparatus were raised by popular subscription, and already enough money has come in to equip the hospitals mentioned and to buy a central receiving set for the St. Elizabeth Hospital, the big government hospital for the insane. It is expected that this hospital will be completely fitted out, and that the scheme will be nationalized so that every hospital patient who served in the World War will be able to keep in touch by radio with what is going on in the world.

THE NECESSITY FOR A PUBLIC HEALTH MUSEUM

Just at this season of the year a special brand of tourists is pouring into Washington at the rate of about twenty-five thousand a week. It is the student tourist, and from the viewpoint of the future of the nation, it constitutes about the most important group of sightseers that come here. Great droves of boys and girls of high school and college age arrive under the chaperonage of their teachers, and are herded from shrine to shrine, there to imbibe patriotic inspiration and historical information. From the Capitol and the office buildings of the House and the Senate, even to the beautiful lawns of Mount Vernon, where just now are lavishly scattered the golden coins of dandelion, the youth of nearby states troop. They visit the National and Smithsonian Museums, the Alroyd House, the Bureau of Engrav-

ing and Printing, the Pan American Union, Continental Hall, and Arlington, where lie the nation's gloriously dead. The Army Medical Museum with its gruesome wax models of pathological specimens fascinates them; the Agricultural Department, and the various monuments to those whose claim to remembrance rests upon the prosecution of human slaughter, all attract them and they return to their schools and colleges with a new idea of the government of these United States. Yet, very few depart with any new thoughts on the protection of that most valuable asset of the nation, our public health. It is true that a few perhaps notice the Bureau of the Public Health Service, that homely building of grey stone opposite the House of Representatives office building, a sombre structure erected by Benjamin Butler as a residence, and for five months occupied by Chester A. Arthur as the White House. It is doubtful if any enter it, and if they did they would carry away no other impression save that of a rather gloomy office building of ancient structure. A few medical students may visit the Naval Hospital and the Hygienic Laboratory erected on the grounds of the Museum of Hygiene, long since unfortunately defunct. Of medical monuments there are few, the statue of Samuel D. Gross, frock coated with scalpel in hand, the beautiful monument to Hahnemann, the effigy of Benjamin Rush in knee breeches, and of course the wonderful Walter Reed General Hospital. Unfortunately, medicine and public health have very small representation in our national pantheon, and as a result the opportunity of impressing the thousands of tourists with the lessons of personal and public health is lost. It has always seemed strange that the proponents of a national department of health have not realized that a museum of hygiene in our capital would be the means of educating our citizenship as to the necessity for such a department in our government. The Public Health Service, housed in two buildings a mile apart, is discharging the national health functions, and would be the natural agency to administer a museum of this sort, and the exhibits which could be shown therein would teach a valuable lesson in the upbuilding and maintaining of a healthy people.

MEDICAL SOCIETY PLANS MODEL PRACTICE ACT

The Medical Society of the District of Columbia has launched plans to obtain a model practice act for the District by empowering the president, Dr. John D. Thomas, to appoint a committee which will draft the legislation for submission to the December session of Congress. The society is of the opinion that more stringent regulations should be invoked here to safeguard the public health. Licensing bills have been submitted by various branches of medical practice at the present session of Congress, and at a Senate subcommittee Senator Copeland, the chairman, suggested that the several interests decide on one measure that would embody the principles necessary to provide for expert diagnosis and treatment.

PROPOSED LEGISLATION

Senator Owen, who has long been identified with the movement for a strong national health, has introduced a bill, S. 3159, to establish a sanitary reserve corps for the Public Health Service. The measure is modelled after the law for the present Medical Reserve Corps of that service, and provides for the commissioning of sanitarians as Sanitarians, Senior Assistant Sanitarians, and Assistant Sanitarians, who are to receive the same pay and allowances as Surgeons, Passed Assistant Surgeons and Assistant Surgeons of the Regular Corps.

The bill, H. R. 7079, prohibiting the importation of crude opium into the United States for the purpose of manufacturing heroin, passed the House of Representatives on April 21, 1924, and was sent to the Senate for action. Congress is evidently awakening to the necessity of curbing the increasing prevalence of drug addiction, and on April 7, 1924, a resolution, H. J. R. 195, authorizing an appropriation for the participation of the United States in two international conferences for the control of the traffic in habit forming narcotic drugs, was introduced into the House of Representatives.

Senator Ball has introduced a bill, S. 1027, to regulate the practice of optometry in the District of Columbia.

On April 7, 1924, there was introduced into the House of Representatives a bill, H. R. 4122, to amend an act entitled, "An act to revive, with amendments, an act to incorporate the Medical Society of the District of Columbia," approved July 7, 1838.

HEALTH WEEK IN WASHINGTON

In preparation for this effort of the various health forces of the city, the Washington Council of Social Agencies, which is the central delegate body of approved welfare organizations, created a health committee, composed of representatives from all of the health movements and hospitals. Each day of health week had its special subject of attention, with a different person appointed as chairman for the day. A series of noonday meetings were held at Keith's Theatre, at which a person of national importance spoke. Dr. William C. Fowler, head of the health department of the District government, was the speaker on the opening day of health week, while Dr. Cary T. Grayson talked on the second day. Each address was broadcast through the local radio stations. Among other speakers listed on the program were Dr. Victor C. Vaughn, Dr. William A. White, of St. Elizabeth's Hospital; Dr. George M. Kober, Miss Grace Abbott, Dr. Edith E. Hooker and William Mather Lewis, president of George Washington University. Organizations which assisted the committee in charge of the week were the Social Hygiene Society; the Child Welfare society; the outpatient department of St. Elizabeth's Hospital; the Red Cross public health nursing service; Columbia Hospital; the Parent-Teacher Association; the Visiting Nurse Association, and the Washington Tuberculosis Association.

RESEARCH INSTITUTION DEDICATED

The new building of the National Academy of Sciences and the National Research Council was dedicated on April 28, 1924. Notable addresses were made by the Bishop of Washington and the President of the United States. The erection of the building was made possible by a $5,000,000 building and endowment donation made by the Carnegie Corporation of New York.

Book Reviews

PHYSICAL EXERCISE

Physical Exercise for Daily Use. By C. WARD CRAMPTON, M.D. Illustrated. New York and London: G. P. Putnam's Sons, The Knickerbocker Press, 1924. Pp. 303.

Dr. Crampton's foreword is to the physician. He writes: "A new field is opening for the physician. . . . You are now called to the service of making superior men, capable of living one hundred per cent. lives—the development of an increasingly better race, living more fully, happily, and efficiently, to the greater glory of God—and man. To aid this purpose, this book was written to you, your patients and health clients, to help you to prescribe exercise for them individually, accurately and with as much certainty of definite result as you expect from pharmaceutical and other therapy, to which exercise is a useful adjuvant, but not a substitute. This book is also designed to help your patients to understand your instructions and to carry them out enthusiastically and efficiently. Then again—remember that you yourself are still human; you should get for yourself the good things you give to others, especially good health in great abundance. The world needs your forward leadership." This quotation serves to illustrate the popular style in which *Physical Exercise for Daily Use* is written, so that it is significant rather for the lay person than for the physician, for whom it would be of value chiefly as an aid in the carrying out of his instructions and advice.

Abundant good health, according to Dr. Crampton, is only for those who possess three essential qualities —common sense, initiative, and will power. Common sense provides the realization that there is a kind of life that is better than mere existence. Initiative means the ability to find out by what means abundant good health may be possessed. Will power insures the carrying out of the program to success. The book opens with a description of what one hundred per cent. condition is, and the remaining chapters tell what part daily exercise, including bathing and proper breathing, plays in its attainment. The illustrations are numerous and excellent.

INTRAVENOUS MEDICATION

Intravenous Therapy. Its Application in the Modern Practice of Medicine. By WALTON FOREST DUTTON, M.D. Philadelphia: F. A. Davis Company, 1924. Pp. xi-542.

Heretofore, when one wanted to look up the subject of intravenous medication, one was compelled to resort to the various medical journals and the propaganda literature of the manufacturers in intravenous products, and much time was wasted. In this book, the author collects all the material and deals with the subjects of venesection, the various methods of blood transfusion, the introduction of saline and tonic solutions into the circulation and intravenous medication. With the increasing popularity of intravenous medication, a book of this sort has become a long felt want and almost a necessity.

The first part of the book is concerned with the general technic, which is given with the most minute detail. After outlining the history of intravenous therapy, the following subjects are taken up: venesection, saline infusions, direct and indirect methods of transfusion, their dangers and special indications, intravenous medication in pediatrics, the general technic of intravenous injection, arsphenamine and allied arsenicals and intravenous anesthesia. The second part deals with the application of intravenous therapy in the various diseases and conditions, including rare and tropical diseases, arranged in alphabetical order. The number of diseases and conditions in which intravenous therapy may be applied effectively is surprising. An appendix contains tables for making solutions, a dose table, metric equivalents, etc. In addition to the intravenous treatment, general treatment is also outlined. A bibliography is appended to each chapter. Although the book has minor faults which are easily corrected, it well deserves a welcome as a pioneer work on the subject. Intravenous therapy has come to stay and every physician should make it his duty to become proficient in its practice.

PSYCHOPATHIC CHILDREN

The Unstable Child. An Interpretation of Psychopathy As a Source of Unbalanced Behavior in Abnormal and Troublesome Children. By FLORENCE MATEER, A.M., Ph.D. New York and London: D. Appleton and Company, 1924. Pp. xii, 471.

In reading Mateer's book one feels that psychology has indeed released itself, in some directions at least, from the bonds that have shackled it. The author shows that this is so, for example, in one phase which particularly pertains to her work. This is in the matter of formal intelligence tests. And what she shows here is typical of all that she presents as related to the application of psychology to the understanding and readjustment of psychopathic children. She writes from a background of theoretical understanding of her work, but with theory fully based upon actual experience. In such experience she is alive to the complexity of the problems to be faced. The situations are fluctuating human situations presenting all the varied demands which reduce theories and methods to a subordinate place. She by no means minimizes their value. Rather she emphasizes their true value as she shows in a most practical way how indispensable they are as agents serving in more vital problems. She lays stress also upon the versatility which must be part of the equipment of the psychological worker and the patience with which such a worker must take up the problems, particularly as she faces the sensitive child. The unhurried quiet attitude, Mateer shows, is often the only one to which the psychic difficulties can respond. The writer's emphasis of this reveals how much her point of view is based on an appreciative knowledge of inner psychic mechanisms. She attests in this, as she illustrates specifically in her case reports, the value of individual analysis of the psychic situation presented. The discussion of the psychopathic child, just what is meant by the term and the relation of the child and of his psychopathic situation to the life about him, shows the same broad and sympathetic comprehension on the part of the author.

HANDWRITING AND CHARACTER

Handschrift und Charakter. Gemeinverständlicher Abriss der graphologischen Technik. Von Dr. Ludwig Klages. Fünfte bis siebente Auflage. Leipzig: Johann Ambrosius Barth, 1923. Pp. xi-254.

The author discusses the subject of handwriting from the fertile point of view of experienced psychology and psychiatry. He reveals something of the manifold expression of the psychic nature which is to be found in a man's handwriting. He lays emphasis upon the dynamic factors at work, rather than upon merely superficial factors which offer little interpretation of this or any other manifestation of the inner life. The author's general psychological discussion with which he opens the more particular study of the varieties of handwriting bears testimony to the breadth and the depth of his thought. In itself it is a stimulating psychological contribution. It is evidence of the writer's range of cultural interest which plays its part in the charm of his style. One leaves the entire work with the feeling that a rich field has been opened and cultivated, but only in part. More than the surface has been touched but greater possibilities have been disclosed which have not been entered in actual investigation. Nevertheless the work is inspiring in the direction of still deeper research. The illustrative material in the form of figures and tables, chiefly the characteristic specimens of handwriting, is suggestive of further work as it is illuminating of the work already accomplished by the author.

MAGIC

A History of Magic and Experimental Science During the First Thirteen Centuries of Our Era. By Lynn Thorndike, Ph.D., New York: The Macmillan Company, 1923. Pp. xl, 835, vi, 1036.

The large amount of material which the author has amassed in these volumes forms an important contribution to the history of human thought. It bears witness to the author's industry and erudition for it is material not readily accessible even to the student nor is it that which is easy to assimilate and reproduce. The reader is somewhat oppressed by the weight and the amount of this material where the author at times has kept himself too closely to the level of a mere compilation of matter. In his concluding chapter, however, he has given rein to his own feeling of appreciation of the task he has set himself. Reading this one is not merely fired with his interest but finds just that which one had missed earlier in the work. The warmth of this chapter gives back life to the entire subject so that this becomes what the author intended, an important record of the slow but persistent struggle of man through the early Christian centuries, and indeed in the years preceding, to free the intellectual power from the shackles of magic thinking. Thorndike makes it evident that there was more active thinking at work, even under the great weight of magic thinking, than we commonly attribute to these so-called dark ages. He presents the names and sets forth the contributions of a long succession of earnest men and at least one sincere woman. He shows how belief in magic bound them, how it spread itself in absurdities over their work. Some writers rejected certain portions of magic beliefs but retained others or created new ones. Thorndike shows how particularly difficult it was for these thinkers to throw off the notion of the stars as supernatural beings with an influence upon human lives. Only very slowly and very imperfectly through the period covered by this study did men come to anything like an experimental knowledge of facts. Some actual observation of nature is recorded but it was very incomplete and the results were obscured by the greater sway of the magic beliefs. That which was called experiment for the greater part was but a testing of some magic formula or belief upon some fact or object of nature.

Thorndike has not much more than suggested the deeper psychological significance of magic in its hold upon the human mind. He does not leave its nature entirely unnoticed, especially in his conclusion. Nor does he there fail to point out its still persistent dominance in present day communities supposedly governed by intellectual concepts. The purpose of his volumes is not so much to interpret magic as to set forth a large section of history in which it still plays a part, to reveal here the effort to attain through this mass of incorrect thinking to a more scientific grasp of facts. In this historical study Thorndike renders a further important service by setting into their relation to each other these thinkers who were preparing the way for later thought. He shows also their dependence upon thinkers of earlier periods and of other lands. No one is an isolated creator of new concepts or new methods of thought. Each one contributes something to progress, it may be only by working over some truth already discovered. All are still set about with errors which they cannot yet reject. Thus a false idealism which history has set about some of these men is corrected. So also is a new light thrown upon the accepted position of thought and investigation in this early period. These were never so hindered by external opposition as current belief would have it. The correction of such errors is part of the service of this book as it places this long period of development in its proper evolutionary setting.

DISEASES OF NOSE, THROAT, AND EAR

Applied Pathology in Diseases of the Nose, Throat, and Ear. By Joseph C. Beck, M.D., F.A.C.S. St. Louis: C. V. Mosby Company, 1924.

This profusely illustrated work reflects the author's well known wide and varied experience in clinical otolaryngology and his special studies in their underlying tissue changes. To this extent, it is a valuable and instructive volume, although there is a certain unevenness both as to quality and quantity in the treatment of different subjects. More might be said about bacteriology, serology, and immunology of diseases of the ear, nose, and throat, as pathological histology alone does not cover the ground satisfactorily. The same applies to the factor of endocrine disturbances which as a form of humoral pathology must be taken into consideration in any study of organic changes due to disease. The photomicrographs are very numerous but not all, unfortunately, very clear. The photographs of patients are better. The diagrammatic drawings are, perhaps, the best. The frontispiece in color represents the drum membrane in a hue "which never was on land or sea"—to say nothing of the human tympanic cavity.

PHYSICAL EXAMINATION FOR SURGICAL LESIONS

Exploration Clinique et Diagnostic Chirurgical. Par. FELIX LEJARS. Paris: Masson et Cie, 1924. Pp. 778.

This work in French is copiously illustrated, showing the different methods of physical examination for various surgical lesions. It is really a very valuable work, for at the present time it is the tendency of clinicians to rely too much on laboratory and x ray findings and to neglect the thorough physical examination, which is after all the main means of accurately diagnosing any surgical condition.

The author's method of palpating the spleen is distinctly original and should be of great aid. One regrets that no photomicrographs are included with the illustrations of gross specimens of tumors. The reviewer would like particularly to recommend everyone to observe his excellent illustrations of differential diagnosis between ovarian cyst and abdominal ascites.

INTRANASAL SURGERY

Intranasal Surgery. By FRED. J. PRATT, M.D., F.A.C.S., and JOHN A. PRATT, M.D., F.A.C.S. Illustrated with 195 Halftone Engravings. Philadelphia: F. A. Davis Co., 1924.

In this volume the authors aim to give a clearer, simpler, and more detailed description of the regional anatomy involved in operation on the interior of the nose and the accessible accessory sinuses, with numerous illustrations mostly from actual specimens on a large scale. In parenthesis, these drawings, the work of Miss Jean Hirsch and her assistants in the Medical Art Shop of the University of Minnesota, are worthy of all praise. The textual description of the anatomy and of the surgical procedures in question is clear, concise, and quite adequate, particularly as the many drawings take the place of a lot of words.

MEDICAL CLINICS

The Medical Clinics of North America. Chicago Number, September, 1923. Philadelphia and London: W. B. Saunders Company.

This number of the *Medical Clinics* contains twenty-one clinics by twenty-three Chicago clinicians. The range of subjects is exceedingly broad, extending from the clinic by Dr. Isaac A. Abt on the nature and treatment of collapse in infancy and childhood, to the clinic by Dr. J. P. Greenhill on the value of x ray in obstetrics. The number contains over three hundred pages of solid, worthwhile medical reading interspersed freely with more than a hundred splendid illustrations. There are excellent clinics on jaundice, hay fever and epilepsy.

SEXUAL ENCYCLOPEDIA

Handwörterbuch der Sexualwissenschaft. Herausgegeben, von MAX MARCUSE. Bonn: A. Marcus und E. Weber's Verlag, 1923.

A most useful and carefully compiled encyclopedia built around terms used in the study of the sexual life of man. The term handbook is somewhat misleading, as it is a substantial tome of about five hundred pages. It is the best work of its kind to date.

HANDBOOK OF LABORATORY TECHNIC

Handbuch der biologischen Arbeitsmethoden. Abt. IV, Teil 5, Heft 1. Untersuchung der Fonktion des Verdauungsapparates. Edited by DR. EMIL ABDERHALDEN. Berlin-Wien: Urban and Schwarzenberg, 1923.

The laboratory chemist will find in this new section of Abderhalden's extensive *Handbuch* a valuable collection of the various technical methods for the chemical analysis of saliva, feces, intestinal gases, stomach contents, etc. There has also been included some of the methods of morphological study of the intestinal contents, and even a little bacteriology. While by no means complete in its treatment of all phases of the subject presented, it will no doubt prove very useful to those engaged in clinical chemistry.

Abt. IV, Teil 8, Heft 4, is devoted to the methods of analysis of honey, artificial sweetening mixtures, and sugar products. There is but little in it that cannot be found in the larger texts on food analysis. Abt. IV, Teil 3, Heft 2, embraces methods for the physical and microscopical methods of studying the blood, including the determination of resistance, refractometry, colorimetry, sedimentation of the blood, investigation of blood platelets, and the methods of study of the hematopoietic organs. The whole forms a useful summary of the various technical methods for blood investigations, but this number, as many of the others, suffers from the enforced isolation of the contributors from practically all contact with the literature other than German.

OTOLOGY

Transactions of the American Otological Society. Vol. XVI. Part II. Fifty-sixth Annual Meeting, held in Atlantic City, N. J., 1923.

The progress of aural medicine and surgery during the past year is reflected in this report of the national society. There are practical papers on Indications for Surgical Intervention in Acute Suppuration of the Middle Ear, by Kerrison; Reports of Cases of Herpes Zoster, by Emerson, and of Meningeal Involvement, by Perkins; a review of the Pathology of Acute Otitis Media and Mastoditis, by Dickie, of Ottawa; studies of Unusual Forms of Extension, by Friedenwald; Otitic Cholesteatoma, by MacCuen Smith; Diplacusis, by Shambaugh. The sociological side of the speciality is indicated in a number of papers on instruction in otology, prevention and management of deafness, training of deaf mute children, schools for the hard of hearing, presenting an interesting symposium.

ORTHOPEDIC SURGERY

Orthopedic Surgery. By ROYAL WHITMAN, M.D., M.R.C.S., F.A.C.S. Seventh Edition. With 877 illustrations. Philadelphia and New York: Lea & Febiger, 1923. Pp. 993.

The reviewer has rarely seen a book so full of excellent illustrations as the present edition of Whitman's *Orthopedic Surgery*. There are a great number of photographs, x ray plates and diagrams, which thoroughly illustrate the points the author wishes to show. To one who is not an orthopedic surgeon, this work seems excellent. The thoroughness with which the different subjects are taken up from all points of view and the adequate bibliography would commend this book to anyone interested in orthopedics.

Medicoliterary Notes.

A recent number of the *American Review of Reviews* quotes from the *Bulletin of the French Société de Biologie* some interesting facts about the shape and position of the eyes in animals, according as to whether they hunt or are hunted. In the hunters, the eyes are in the front of the head and close together; they are deep in their sockets and protected by dorsal ridges and by the masticatory muscles. Thus, the binocular field of vision of such animals is large, while the panoramic field is limited. Hunters that lie in wait for their prey have pupils vertically elliptical; those that chase their prey have round pupils. In hunted animals, the eyes are at the sides of the head and wide apart, with shallow orbits and no protection from ridges or muscles, so that they usually protrude. Hence, their binocular field is very small or entirely lacking, but their panoramic field embraces almost the whole horizon. In the fastest runners, the pupil forms a horizontal ellipse which assists in broadening the field of vision; poor runners have round pupils. The frog, both hunter and hunted, has frontally placed eyes, but they protrude and have crosswise elliptical pupils.

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Public Health in the United States: an Outline with Statistical Data, by Harry H. Moore, long associated with the U. S. Public Health Service, is one of the recent publications of Harper & Brothers. The book has an introduction by Dr. Haven Emerson.

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The new Hudson Towers Hospital Hotel has a remarkable cornerstone, which was laid on April 27th. It contains a complete set of specimens of all known disease producing bacteria; a collection of medicines regarded as specific cures for diseases; a record of diseases regarded at present as incurable, and a motion picture film showing doctors performing important operations.

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Illinois had from April 20th-26th a health promotion and safety week which included health sermons and talks in the churches and Sunday schools; a diphtheria eradication day, a dental hygiene day, a better baby conference and birth registration day, a physical examination day, a school health day, and a milk for health or better diet day.

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M. Mouquet, a member of the staff of the Paris Museum of Natural History, is the author of an interesting article, recently published in the Paris *Revue d'Histoire Naturelle Appliquée*, on the treatment of animals in medieval times. At that time, animals were supposed to have souls and a knowledge of good and evil, so were often brought into court for their misdeeds and tried, or duels were arranged between them and human beings. A story is told of a handsome dog whose master had been found murdered in the forest. The dog insisted upon fiercely attacking whenever he met him a certain man, so that the latter was suspected of having committed the murder, and sentenced to a duel with the dog. A club was named as the man's weapon, and the dog was allowed a kennel to take refuge in. The dog won.

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Health News, bulletin of the New York State Health Department, reports three recent outbreaks of trichinosis in the State, with a total of nineteen cases and three deaths. The bulletin warns health officers to be on the lookout for the disease, since the physician who attended several of the cases states that he is convinced that there were many cases in Westchester County diagnosed as grippe.

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The first number of *The Endocrinist* has recently been issued. This is a small quarterly journal devoted to "comment on current endocrinology and endocrine therapy," and is edited by Dr. John J. McNulty.

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An editorial note in the *Medical Woman's Journal* states that the effects of malnutrition during the war are now being significantly reflected in the physical defects of young men who were from fourteen to twenty years of age at the time of the war, and are now presenting themselves as recruits for the Roumanian army. More than thirty-one per cent. of those who presented themselves last year for enlistment were rejected after medical inspection as physically unfit, and more than twelve thousand were rejected for the same reason during the period from January 1 to September 30, 1923.

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Recent Italian scientific journals have been describing a new "thermoaero locomotive," a simple device applicable to an ordinary locomotive with slight expense and with only slight remodelling. An internal motor, fed with oil, produces generously hot compressed air and steam, which are the motive power. It is stated that the locomotive may be stopped without stopping the motor, power for upgrades may be increased and there are no smoke, soot, nor ashes. It is estimated that traction costs on the Italian railways may by its use be reduced 70 per cent.

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The British Labor Government has introduced into the House of Commons a socalled morals bill for the protection of youth. It classifies wilful destruction of an unborn child as murder; makes any woman who seduces a boy liable to two years at hard labor, *woman* being defined as a female over sixteen, and *boy* as a male under eighteen; prohibits children under sixteen from performing, singing, or being exhibited in public for gain; raises the marriage age to sixteen for both sexes (it is now fourteen for boys and twelve for girls); and restricts the sale of liquor to or by minors.

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A recent invention described by the London papers is called the pedescope. It is a Roentgen apparatus that shows the exact position of bones and muscles when a shoe is being tried on, thus not only facilitating a good fit, but also correcting foot deformities by indicating proper shoes.

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Dr. J. M. French, of Milford, Mass., has in the *American Journal of Clinical Medicine* an article on the present shortage of physicians, especially in rural districts. He quotes to confirm this fact from various sources, among them a recent report of the Committee of Medical Education made to the Philadelphia Medical Society, which states that it is variously estimated that there is in Pennsylvania only one doctor to every 400 to 700 population. Philadelphia has one to every 526 and Pittsburgh one to every 447. The proportion for the rest of the State is practically one physician to every 1,000 persons.

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Another addition to the recent list of works reconciling, or attempting to reconcile, science and religion, is a book entitled *Where Evolution and Religion Meet*, by Prof. John M. Coulter, of the department of botany of the University of Chicago, and Dr. Merle C. Coulter, assistant professor of plant genetics at the same institution. Macmillan is the publisher.

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Among the many popular errors in current belief, according to Vilhjalmar Steffansson in the *Spectator*, is that the Eskimos are not oil drinkers. "They actually consume less 'food for power,'" he writes, "than the average Scotsman or Norwegian. . . . Eskimos undoubtedly would be fond of fat—it is even possible they might drink oil—if it were true that they were more exposed to cold than the rest of us. This is the weak link in the chain." He goes on to tell us that the Eskimos are really less exposed to cold than the average American or Britisher, for they wear heavy fur clothing when out of doors, and their snow huts are so warm that in midwinter they sit in their igloos, actually steaming with persperation, which they continuously mop from their bodies with cloths. The only time the writer ever saw an Eskimo shiver was in midsummer when his clothes were worn out.

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A recent issue of the *Living Age* quotes from an article in *Young India*, the Ghandi weekly, showing how the "return-to-homespun" gospel of the Noncooperative Movement affects the daily routine of the Indian physician. Dr. Umachgi, known as one of the foremost practitioners of the city of Gadag, finishes his medical duties at twelve every day. After this, he spins and weaves for two hours. Dr. Venkat Rao, another busy physician, also devotes two hours of every day to spinning and weaving.

Abstracts from Current Literature

DERMATOLOGY

Some Observations on Striæ Distensæ.—The following conclusions are drawn by F. Bedo Hobbs (*Lancet,* September 1, 1923), in regard to striæ distensæ: 1. They are confined almost entirely to young adults between the ages of twelve and twenty-two. 2. At this age the skin is very delicate and growing rapidly and the elastic tissue fibres rupture, allowing the white fibrous tissue and overlying epidermis to stretch, thus giving rise to striæ distensæ. 3. The striæ may be associated with almost any febrile disease. 4. The distention and ultimate cleavage of the skin may be caused in healthy individuals by the rapid accumulation of fat in the subcutaneous tissues of the axillæ, thighs, etc. 5. In other cases it may be due to a simple distention following an effusion into the subcutaneous tissues. 6. Often, however, the nutrition of the skin is impaired by some constitutional disease, and the main factor in these cases is the effect of posture—the striæ occurring at the position of maximum tension.

Subcutaneous Injections of Paraffin.—R. Gersuny (*Wiener klinische Wochenschrift,* October 11, 1923) maintains that the subcutaneous injection of paraffin has not been given the consideration which it deserves, not only on account of its simplicity, but also because it has given results far superior to those obtained with operative procedures. He obtained very good results in the following conditions: saddlenose, Schlatter joint of the elbow after resection, prolapse of the rectum, flatfoot depressed scars on the neck, incontinence of urine, fistulæ and facial atrophy and hemiatrophy. Only such paraffin should be used as will not melt at fever temperature. Absolute asepsis of the paraffin used and the instruments is necessary.

Death from Eczema.—Johann v. Petheö (*Monatsschrift für Kinderheilkunde,* October, 1923) asserts that eczema may actually cause death. Its explanation probably lies in deep metabolic disturbances, which lead to the catastrophe. Pathologicoanatomical or histological investigations cannot throw any great light on the subject. It is not advisable to endeavor to cause the eczema to disappear by energetic treatment at any price, as the symptom of its disappearance previous to death is in favor of the fact that there must be some peculiar relationship between the skin and the crisis occurring within the body. The treatment of the eczema includes the production of a change in the metabolic processes, combined with local treatment, especially irradiation treatment.

Exanthem from Bathing.—Naegeli (*Schweizerische medizinische Wochenschrift,* December 6, 1923) describes a maculourticarial eruption, which is seen in persons during or after bathing during the socalled dog days (July 22d to August 22d). It usually lasts two to three days and occasionally eight to fourteen days. It appears to be infectious in origin. The noxa undoubtedly is in the water and it may be an animal plankton. Marked soiling of the water seems to have no relation to this condition.

Prognostic Significance of Exanthemata in the Late Nervous Manifestation of Syphilis.—A. Arpási (*Wiener klinische Wochenschrift,* January 3, 1924), calls attention to the fact that syphilitic eruptions are sometimes symmetrical. The appearance of symmetrical or segmental exanthemata the author considers as an indication of the presence of a central nervous affection, which is probably responsible for the development of late syphilitic manifestations, especially in the spinal cord. This also speaks in favor of an early involvement of the central nervous system.

Cause of Baldness.—According to the conception of R. O. Stein (*Wiener klinische Wochenschrift,* January 3, 1924), the theory that baldness is caused by seborrhea is not tenable, as it almost never occurs in women. He considers it rather as a purely secondary sexual character of the male who is afflicted with seborrhea. The latter disease affects both sexes and the entire scalp of the male, yet it is found practically only in males and it does not affect the entire scalp. A study of typical baldness in young men gives the impression that the entire process consists in a pushing upward and backward of the normal anterior margin of the hair. Normally, the hair line forms an arc in children and in women. After puberty the hair begins to fall out at the side of the forehead in men and this author considers a typical sex character—the socalled frontal calvities of adolescents. This frontal region is also a point of predilection for secondary sex characters in certain male mammals. The parietal region constitutes another centre of loss of hair. In eunuchoid individuals and in true eunuchs this calvities of adolescents, which constitutes the forerunner of baldness, is not observed. The bald triangles on the forehead may be seen in premature puberty and in some women with other masculine characters, especially hypertrichosis.

Toxemia of Severe Superficial Burns.—Bruce Robertson and Gladys L. Boyd (*Journal of Laboratory and Clinical Medicine,* October, 1923) used young anesthetized rabbits in the study reported, producing skin, subcutaneous tissue, and muscle burns. The transplantation of burned skin to healthy rabbits was also performed; these animals exhibited toxic symptoms in all cases within an hour of the operation. A toxin is produced in burned tissue, in larger quantities in skin burns, which circulates in the blood either in, or absorbed by, the red blood corpuscles, and which causes the symptoms seen in bad superficial burns, and in some cases death. Extract of burned skin and whole citrated blood from burn cases are toxic. Extracts of skin burned postmortem, the contents of burn blisters, and the blood serum are not toxic. There is increased protein catabolism in burns, as evidenced by the increase in the nonprotein nitrogen and urea nitrogen of the blood. The toxic substance was found to consist of two portions, one of which is thermostabile, diffusible and neurotoxic; the other is thermolabile, colloidal and necrotoxic. Chemically the toxin consists of primary and secondary proteoses. The authors could not find any evidence of the production of antibodies against the burn toxin.

SURGERY

Etiology and Prophylaxis of Clavicular Fractures Following the Veit-Smellie Maneuvre.—I. Amreich (*Wiener klinische Wochenschrift,* December 27, 1923) claims that the fractures of the clavicle following the Veit-Smellie maneuvre can be avoided. However, the Veit-Smellie maneuvre is blamed not only for the clavicular fractures following this procedure but also other clavicular fractures, which are produced even before its application during the manipulation of the arms, when the fractures are observed not at the moment of their occurrence but only later after the birth of the child. The fractures occurring as a result of the manipulation of the arms occur in an indirect manner when the clavicle receives the force during the manipulation of the arms through the scapula or through the scapula and humerus. In these cases there is a longitudinal compression of the clavicle which strikes the clavicle at its weakest point. The anatomical site of all these fractures, therefore, is the same spot on the clavicle and no conclusions as to the mechanism of its origin can be drawn from the completed pathologic end result.

Treatment of Congenital Talipes Equinovarus.—Naughton Dunn (*British Medical Journal,* December 22, 1923) states that the treatment of congenital equinovarus should be commenced at the third or fourth week. Repeated severe manipulation of the foot will be necessary to overcome the inversion and adduction of the foot. Correction of the deformity should be followed by fixation in the position of correction obtained. When the adduction and inversion of the foot have been corrected, it will usually be necessary to elongate the tendo achillis to complete the correction of the equinus deformity. Other surgical measures must be adopted unless full true correction of the deformity has been obtained by manipulation and elongation of the tendo achillis. Division of the tibialis anticus is not necessary and may lead to subsequent cavus deformity of the foot. We should insist on descent of the os calcis by division or elongation of the tendo achillis if necessary, but we should realize that prolonged dorsiflexion of the ankle may lead to nonunion of this muscle with a subsequent calcaneovavus deformity. In cases where simpler measures fail, a good permanent result may be obtained by a resection of the midtarsal and subastragaloid joints.

Physiological Principles Underlying the Treatment of Injuries and Diseases of the Articulations.—A. G. Timbrell Fisher (*Lancet*, September 15, 1923) emphasizes the need for research into the physiology of the articulations, because many stiff and deformed joints are preventable by a knowledge of physiological principles, and because such deformed joints can often be made mobile. Articular cartilage is suitable for studying the behavior of cells under varying conditions, since it contains no bloodvessels or nerves except in the perichondrium near the edge. The irregular proliferations seen in osteoarthritis are intermediate between inflammation and new growth. Bone has less vitality than the articular cartilage. In acute arthritis the part played by movement is limited, but in the chondroosseous and synovial types of chronic arthritis, respectively, complete rest is followed by sclerosis of the synovial membrane and capsule. Movement is still further impeded by the development of osteophytes at the articular margins. Secondary shortening of the tendons and other periarticular structures results and the joint slowly becomes more fixed, often in a position of gross deformity.

The affected joint should be moved to the fullest extent daily without overexertion, and every effort should be made to preserve the nutrition of the joint structures and the muscular tone. In most cases, particularly in joints of the lower extremity, the intraarticular pressure should be diminished. The etiological factor must also be sought and treated. The joint movements, besides preventing scar formation in the soft parts, cause the osteophytes to develop in such a way that there is no interference with movement.

Prognosis After Removal of Semilunar Cartilages.—In considering the prognosis special attention is given by R. J. McNeill Love (*British Medical Journal*, August 25, 1923) to the following features: 1. recurrence. 2. Pain. This is, of course a difficult symptom to assess at its true value. Many patients complain of slight or diminishing pain for an interval varying from a few weeks to two years, but unless it causes actual disabliity such pain is ignored in considering the prognosis. 3. Movement. With a relatively healthy joint, followed by absence of splinting and early movements, there seems to be no reason why movement should be restricted after operation. 4. Stability. A feeling of weakness is a common immediate after-result of meniscotomy. This is in a great measure psychical, as the patient is often accustomed to the deranged knee feeling weaker than its fellow. Encouragement soon leads to re-education and restoration of confidence; and in the majority of cases the patient soon learns to trust his knee again and appreciate its stability.

Results fall naturally into three groups: 1. Good. Where there is negligible pain, no sensation of weakness, and movements are unimpaired. 2. Fair. This includes cases in which there is slight limitation of movement or pain occurring periodically or when the limb is placed in certain positions. 3. Poor. This includes cases in which recurrence takes place or range of movement is less than a right angle; also cases in which pain is frequent or a sensation of weakness remains in the joint. Prognosis seems to depend chiefly upon two factors: the number of attacks and the age of the patient.

Recurrent or Habitual Dislocation of the Shoulder Joint.—A. S. Blundell Bankart (*British Medical Journal*, December 15, 1923), states that in some fractures, either of the anterior margin of the glenoid cavity or of the greater tuberosity of the humerus, there is an associated recurrent dislocation of the shoulder joint. Such fractures might easily be caused by the direct force which produces the initial dislocation. They must, however, be regarded as accidental, and not essential, to the recurrent dislocation. The essential feature is the detachment of the capsule from the fibrocartilaginous glenoid ligament. In the author's cases the defect was repaired by interrupted sutures of silkworm gut passed between the free edge of the capsule and the glenoid ligament. It is well to freshen the bone on the neck of the scapula, so that the glenoid ligament may adhere to it. Having repaired the joint defect, the divided subscapularis tendon is reunited, the detached portion of the coracoid process is sutured in place, and the wound is closed. After the operation the arm is kept at rest for four weeks, and then active and passive movements are begun and persisted in until the movements of the joint are normal.

Formation of Pseudarthrosis in Bone Transplants.—W. Odermatt (*Schweizersiche medizinische Wochenschrift*, January 10, 1924) states that no satisfactory theory can be established in regard to the occurrence of erosion of the transplant. We can only observe its occurrence and the conclusion can be drawn that the healthy tissues of the body have the power of gnawing through an immobilizing transplant wherever a necessary motion is disturbed. This takes the form of a coarsely mechanical articulation in the joint and of a slowly progressing longitudinal growth at the epiphyseal line. Wherever an extra-articular or intra-articular bridge of bone is inserted, even in the Albee immobilization of the vertebral column, these types of pseudarthroses have been quite frequently observed. Even though it sounds paradoxical, the author considers this process as physiological. But there are also pathological cases of this type, as in the socalled recurrent pseudarthroses, in which a cleft formation occurs at exactly the former site following a pseudarthrosis operation and in the sympathetic pseudarthrosis in the second bone of a two bone joint with pseudarthrosis of the other bone. The younger the individual the more do the tissues show this autonomous action. The lesson to be learned from this finding is that arthrodesis operations should not be undertaken before the fifteenth year.

New Operation for Certain Forms of Cleft Palate (Pickerill).—Th. Naegeli (*Schweizerische medizinische Wochenschrift*, January 10, 1924) recommends the following procedure: The posterior borders of the cleft velum are incised in such a way, for example, that on the right side the border is freshened below and externally and on the left side internally. Incisions made toward the anterior make the subsequent suture more easy. The two dissected portions are then laid transversely over the cleft, so that the right part comes anterior to the left and the freshened borders come in contact, when they are sutured with fine silk without tension. After the operation, a prosthesis is prepared by a dentist and made to consist of two parts. The anterior part is fixed to the teeth and closes the anterior cleft; the posterior part is articulated with the former by a hookshaped arrangement, which is fastened to the muscle bridge and moves with it. In this way the nasopharyngeal space is completely closed off. This operation is indicated in cases where the patient is somewhat advanced in years and where the soft parts are insufficient for the usual plastic operation and also in patients in whom the uranoplastic was unsuccessful during early years, but where there is still sufficient material for the formation of a bridge.

Treatment of Congenital Megacolon.—According to Monnier (*Schweizerische medizinische Wochenschrift*, January 10, 1924), the operative interferences for megacolon may be divided into the palliative and radical operations. The former include colopexy, coloplication, the various anastomoses and, finally, the cecostomy and appendicostomy. All of these procedures have occasionally given good results. But they are not entirely reliable because recurrences are not eliminated. Colectomy is undoubtedly the operation of choice, but the mortality is very bone ash, by the conditions under which food is obtained less than five years of age. The mortality is considerably reduced in the two stage operations (eight per cent.). The final results are excellent. If possible, the author endeavors to retain the cecum, as the proximal part of the colon has been shown to possess an important function in the process of digestion. The palliative operations are very useful, as they enable us to prepare the patient for the radical operation, inasmuch as they eliminate the danger of toxemia and enable the patient to overcome the radical operation more readily.

Transverse (Supracondylar) Fracture of the Lower End of the Humerus.—Paul Bernard Roth (*British Medical Journal*, December 22, 1923) concludes as follows: 1. The fracture occurs almost entirely in children. 2. It is the commonest fracture affecting the lower end of the humerus. 3. It can be caused by quite a trivial accident. 4. It is usually described as a separation of the lower epiphysis of the humerus, but this is a great rarity, seldom seen. 5. Many of these cases cannot be reduced by manipulation and a poor functional result follows. 6. They can, however, be reduced accurately by operation, and a perfect functional result may be obtained. 7. Operative treatment should therefore be employed far more often than it is at present.

Parathyroid Glands in Relation to Surgery.—T. P. Dunhill (*British Medical Journal,* January 5, 1924) endeavors to show that greater consideration should be given to the parathyroid glands in surgical procedures, chiefly for the purpose of warding off tetany. He believes that the parathyroids are best protected by clean dissection of the posterior borders of the thyroid gland and by ligation of the branches of the inferior thyroid artery as they enter the gland. The treatment advised for postoperative tetany includes: 1, the injection of four gm. of calcium lactate; 2, the transplantation of parathyroids from a member of the family, or an individual of the same blood group; 3, parathyroid medication.

Nature and Cause of Bone Diseases After the War.—Wilhelm Loll (*Wiener klinische Wochenschrift,* October 18, 1923) comes to the conclusion that the cause of bone diseases following the war is a qualitative change in the food, namely, a great deficiency of phosphoric acid. This view is strengthened by the findings of the constituents of the bone ash, by the conditions under which food is obtained and its nature and the results of corrective therapy.

RESPIRATORY TRACT

Treatment of Acute Pneumococcus Infections of the Respiratory Tract.—G. J. Langley (*Lancet,* January 5, 1924) establishes the following fundamental principles: 1. Pneumonia is an acute general infection. 2. Its annual deathroll is sufficiently high to merit not only careful attention but furious thinking. 3. A greater statistical knowledge is more than desirable. 4. Bacteriological investigation is not only the road to increased knowledge but also the key to treatment. 5. There is sufficient evidence to justify the statement that serum treatment should be instituted in suitably typed cases as early as possible in the disease, should be given in suitably large doses, should be repeated every eight hours, and should be persisted in. 6. Optochin in nontoxic doses merits a further trial on the grounds of experimental data. 7. Without the aid of one or both of these methods we are left with a merely expectant routine, scarcely justified in the light of such masses of evidence as modern research has placed at our disposal.

Chronic Bronchitis.—Joseph John Perkins (*British Medical Journal,* December 15, 1923) classifies the predisposing causes of chronic bronchitis as follows: 1, occupational (atmospheric pollution); 2, climatic conditions; 3, preexisting local pathological conditions, especially in the upper respiratory tract (nose and pharynx); and, 4, constitutional (often metabolic) factors. A preexisting or underlying predisposing condition can usually be found and success depends upon the treatment of such conditions. The preservation or restoration of the open air habit of life and respiratory exercises are a very essential part of the treatment. The system of respiratory exercises is divided into two courses. The first course aims, by a series of inspiratory exercises carried out in the recumbent position, at increasing the movement of the lower ribs and developing the inferior lateral region of the thorax. The lower chest is thereby expanded and the action of the lower part of the lungs is improved. When this has been attained the patient is taught, in the second part of the course, to contract the abdominal muscles and drive the diaphragm forcibly upwards. In this way the lung capacity is improved through the aeration of the lower part of the lungs.

Vaccine Therapy of Chronic Bronchitis.—J. Odery Symes (*British Medical Journal,* December 15, 1923) says that, as a rule, improvement may be assured and a cure may be frequently established by vaccine therapy in chronic bronchitis. The author's success has not been as great with stock vaccines as with autogenous vaccines. The organisms most frequently responsible for the continuation of this disease are in their order of frequency the pneumococcus, various streptococci, and the Micrococcus catarrhalis; Pfeiffer's bacillus, Friedländer's bacillus, and staphylococci are also frequently found. It is much more common to find two or three varieties of organisms in a sputum than to obtain a practically pure culture. If the sputum cannot be obtained satisfactorily a nasal swabbing way be taken. Care in the preparation of the vaccine is most important. The dose must be sufficient to excite reaction—a local reaction at the site of inoculation, and a mild general reaction. Overdosing may result in a temporary setback and shake the confidence of the patient. It is well to begin with small doses—say five million of each organism—and gradually and at short intervals to raise the dose until a reaction is obtained. The intervals between the early tentative doses should be five days, and when once reaction is established this may be lengthened to seven days. If reaction is excessive, causing distress to the patient or a rise of temperature of more than one degree, the size of the next dose should not be increased, or the interval should be prolonged to ten days. The vaccine treatment must be prolonged over a period of at least three months, although the immediate symptoms may have disappeared, the object being not merely the amelioration of the present condition but also the establishment of a high degree of resistance. Preferably a new vaccine should be prepared at least once during such a three months' course, as certain of the organisms originally present may have died out or fresh varieties may have supplanted them. In the same patient the bacteriology of successive attacks of bronchitis is seldom identical. During quiescent periods, prophylactic doses of one of the various stock vaccines used for prophylactic purposes and containing streptococci and pneumococci. Micrococcus catarrhalis and Bacillus influenzae are serviceable. Vaccine therapy certainly establishes a fairly long immunity, but absolute immunity is seldom or never secured. Failures in vaccine therapy are probably due to some error in the preparation, dose, or administration of the vaccine, and can only be eliminated by repeated bacteriological examination of the sputum and by the preparation of new vaccines of varied combinations and strengths. Failure may also be due to some constitutional disorder in the patient, which has been overlooked, such as gout, emphysema, arteriosclerosis, or cardiac insufficiency.

Climatic Treatment of Chronic Bronchitis.—E. Hyla Greves (*British Medical Journal,* December 15, 1923) asserts that climate plays an important part in the treatment of chronic bronchitis, for there is no class of patient more susceptible to changes of temperature than the bronchitic. In selecting a suitable winter climate for him it is essential to bear in mind certain important points—namely, equability of temperature, sunshine, shelter from wind (especially from the north and east), and dryness of subsoil. The sudden drop of temperature in the early morning hours often accounts for the acute exacerbations of bronchial catarrh in the aged. Overheated rooms and excessive clothing should be avoided, and aged patients should be gradually accustomed to living and sleeping in comparatively cool rooms. Underlying conditions, of which bronchitis may merely be a secondary manifestation, should be properly treated. The method of continuous inhalation of dry vapors or the various forms of vaporizers, often give definite relief, especially where associated with a tendency to bronchial spasm. Definite relief is also obtained from dry cupping over the bases of the lungs in acute or subacute exacerbations of the catarrh, especially when the bases become engorged and dyspnea and cyanosis become pronounced and the right side of the heart embarrassed.

Chronic Bronchitis in Relation to Nose and Throat Infections.—G. Seccombe Hett (*British Medical Journal,* December 15, 1923) emphasizes the following points: 1. Many if not the majority of cases of chronic bronchitis have their source of infection in the upper respiratory tract and are descending infections. 2. In all cases of chronic bronchitis the nose and throat should be examined from this point of view. 3. Pathological conditions of the nose and throat should be treated. 4. Special attention should be directed to the treatment of nasal obstruction, nasal sepsis, and nasal sinus infections.

Pneumonia and Its Complications.—Walter Broadbent (*Lancet,* January 5, 1924) states that in the treatment of pneumonia it is most important that the patient should be kept as quiet as possible both when nursing procedures are being carried out and during physical examination by the doctor in order to prevent autoinoculation from movement. As to specific treatment, a vaccine, if of the right type of pneumococcus and the correct combination of germs, may be useful, if given early in the disease; but it is not safe in the deeply toxic cases with low temperatures, as the negative phase may be too much for the patient. In delayed resolution, when the physical signs are not clearing a week after the subsidence of the disease, autogenous vaccines are of great assistance, also after operation for empyema they hasten the cure. In some cases antipneumococcus serum has given some good results. Medicinally, aspirin is

undoubtedly valuable, but the doses should not be too large. Quinine, given with aspirin, is also helpful, and this especially in postinfluenzal cases. The creosote and iodide mixture has given good results but the patients dislike it. Ipecac and iodide may be useful in loosening expectoration. Oxygen should always be kept ready. As a sedative at night Dover's powder is one of the best. In cases of intense poisoning Warburg's tincture is valuable given by mouth or rectum, as, besides being a bactericide, it is a strong stimulant. It must be given in alcoholic solution, since water precipitates the resins and destroys its efficacy. Hyperpyrexia should be treated with ice, sponging or packing, and by large doses of Warburg's tincture. It is important to watch the heart. In the early stages of lobar pneumonia, if there are signs of overdistention of the right heart, six leeches over the site of the pneumonia will have a good effect. If the pulse rate is above 100, digitalis should be given regularly, but not in large doses, and if up to 120 hypodermic injections of strophanthin should be given. Camphor hypodermically is also useful.

Treatment of Asthma with Combined Peptone and Vaccine.—John Veitch (*British Medical Journal,* January 5, 1924) used three different strengths of solution: 1. Five c. c. of five per cent. solution equals 0.25 gm. peptone plus 235 million organisms mixed catarrhal vaccine. 2. Five c. c. of ten per cent. solution equals 0.5 gm. peptone plus 940 million organisms mixed catarrhal vaccine. 3. Ten c. c. of ten per cent. solution equals one gm. peptone plus 1880 million organisms mixed catarrhal vaccine. The injections were given every seven days: for the first four weeks half a tube of solution 1 a week, for the second four weeks half a tube solution 2, and so on, increasing the strength of dose. The injections were given intramuscularly in the socalled painless area just below the anterior superior spine of the ilium. The following points were noted: Generally the results were quite good.

NEUROLOGY

Massage as a Therapeutic Measure in Psychomotor Excitement.—L. Stanojevic (*Wiener klinische Wochenschrift,* December 27, 1923) comes to the conclusion that both dry massage of the entire body musculature as well as massage and effleurage in the warm bath are excellent therapeutic measures in the strictest sense of the word in psychomotor conditions of excitement. They are a vast therapeutic improvement over the remedies used for this purpose heretofore. This kind of physical therapy is contraindicated in organic diseases of cardiac muscle, severe cerebral arteriosclerosis, conditions of amentia and in epilepsy with severe spastic attacks.

Nerve Centres: Their Constitution and Significance.—P. T. Herring (*British Medical Journal,* October 27, 1923) states that sensation and reflex action are closely bound up together. Even visceral reflexes may be productive of sensation. Alterations in the heart beat, palpitation, respiratory disturbances, vasoconstriction and vasodilatation give rise to subjective phenomena. Irritability, exhaustion and depression are of common occurrence in ill health. The fatigue of a synapse renders that synapse more resistant to the passage of a nerve impulse, and fatigue of the afferent pathways should be a negation. But fatigue and the sensations met with in ill health are positive sensations and not mere negations. They are, as a rule, general and not localized to any particular part. Their cause is unknown, but must be sought for in some alteration in the afferent nerve impulses affecting the conscious state.

Treatment of Migraine by Calcium Lactate.—A. Douglas Bigland (*British Medical Journal,* December 15, 1923) has obtained excellent results in the treatment of migraine with calcium lactate. At the first sign of an oncoming attack, as evidenced by the ocular aura, thirty grains of calcium lactate should be taken immediately. The patient should always have the tablets of calcium lactate with him. The tablets should always be fresh. Calcium lactate does not cure migraine, but it does abort the attack and frequently it prevents the occurrence of the headache and vomiting and does not keep the patient from his work.

Treatment of Encephalitis Lethargica.—In a review of the therapeutic experiments on encephalitis lethargica, Hans Hoff (*Wiener klinische Wochenschrift,* December 20, 1923) draws the following conclusions: 1. The intravenous administration of urotropin does not appear to produce any improvement in the disease. 2. The intravenous use of large amounts of iodine in the form of a fifty per cent. solution of sodium iodide or of Pregl's solution does show improvement, especially in the myoclonic forms, but it cannot prevent the transition of the disease into the chronic stage. 3. Marked improvement in the forms of this disease associated with meningeal symptoms was observed following injections of staphylococci and meningococci. Injections of iodine and typhoid bacilli improve the results, particularly in acute cases, but the results were poor in the chronic cases. Similar results are obtained with intravenous injections of Pregl's solution and typhoid bacilli. The Besredka vaccine was always used intravenously. 5. With the use of typhoid injections alone marked improvement was always observed in the lethargic forms of the disease. 6. In a number of acute cases vaccineurin was injected intravenously—with fairly good results. This remedy may also prevent recurrences. This treatment was useless in the chronic cases. 7. With the aid of therapeutic malarial inoculations it was possible to improve about one fourth of the cases treated in which there were sequelæ of the encephalitis; among these there were also a number of cases of Parkinsonism. However, the improvement was not very marked. 8. As a rule the Parkinsonism and the other sequelæ of the encephalitis appeared to be improved by injections of sodium cacodylate, but even with this remedy the improvement was not very striking. 9. It is evident that acute encephalitis is quite amenable to treatment.

Experimental Studies on Encephalitis.—Fritz Silberstein (*Wiener klinische Wochenschrift,* January 10, 1924) found that healthy dogs may be the carriers of encephalitis. In two cases, healthy dogs developing encephalitis, in which Eck's fistulæ were established after the feeding of meat, acted as carriers to rabbits. By means of immunization of rabbits carried out for a long time it is possible to produce a relatively highly virulicide antiencephalitis serum. As a result of these experiments on the pathogenesis of encephalitis, the author advances the following theory: As a result of disturbances in the intermediary metabolism—especially the loss of function or injury of the liver—the immunizing and protective mechanism of the central nervous system may be injured to such an extent that a saprophytic organism, hitherto dormant in the nasopharyngeal space, may produce a fatal infection. Inasmuch as not only the identity of the herpetic and encephalitic viruses is probably established but also as healthy persons may be the carriers of the encephalitic and herpetis viruses, respectively, the inference that such an injury may be responsible for the enigmatical relationship between herpes and encephalitis seems plausible.

The Parkinsonian Syndrome in Lethargic Encephalitis: A Pathological Posture.—Ivy Mackenzie (*Lancet,* December 29, 1923) states that the outstanding features of organic behavior in the Parkinsonian syndrome are the attitude of the patient, the muscular rigidity, and the impediment of voluntary movement especially of a rotatory character. In the absence of evidence of involvement of the corticospinal tracts attention is attracted to the complementary proprioceptive system. Examination of the vestibular apparatus shows that in a proportion of cases there is evidence of interference with the normal processes of somatic equilibration.

Treatment of General Paralysis by Infection with Malaria.—W. McAlister (*British Medical Journal,* October 20, 1923) reports a series of twelve cases, in which he inoculated the patients with blood drawn by syringe from a patient at the height of a malarial paroxysm. Each patient received a subcutaneous injection of approximately two c.c. of infected blood. The injections were made in the loose skin just below the angle of the scapula. When the needle was inserted the subcutaneous tissues were probed in all directions to a distance of about an inch and a half so as to diffuse the plasmodium and promote absorption as rapidly as possible. The patients were then allowed to resume their normal mode of life. The subsequent treatment was as follows: The infection was allowed to run its course unimpeded for any number of paroxysms up to twelve (average ten). To arrest the infection, quinine hydrochloride was given in doses of ten grains every four hours for three days, and thereafter five grains were given thrice daily for fourteen days. The temperature in every case began to subside immediately after the administration of the quinine and became stabilized by the fourth day.

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Medicolegal Notes.

AUTHORITY FOR TREATMENT GIVEN—NECESSITY FOR FREQUENT EXAMINATIONS.

In a malpractice case where there was reputable authority shown by the testimony of expert witnesses for the treatment given, the Washington Supreme Court holds, Miles v. Hoffman, 221 Pac. 316, that the physician could not be held negligent in following that treatment.

In this case the patient lived in the country, some miles from the doctor's office, and was attended by untrained nurses, conditions which the court considered, "the doctor knew or should have assumed, and notwithstanding the seriousness of the injury and the results which medical men look for and seek to avoid in such cases, there was no evidence of careful instructions or warning to the nurses which, as the jury might readily find, should have been given, and in the absence of such instruction, the infrequency of the doctor's visits, his failure to take the temperature of the patient, and the like, of which there was some evidence, were such as warranted the jury in finding that respondent could, if he had been more diligent in these respects, have detected the presence of infection, and perhaps that the synovial sac had been penetrated, long before he did. Although the proper treatment was administered in the beginning, yet there may have been negligence in not giving proper instruction, or making frequent and sufficient examinations to determine the necessity of a change of treatment."

This view, the court said, would have necessitated a reversal of the judgment for the defendant appealed from, had there been proof from which the jury might reasonably have inferred that the final results were caused wholly or in part by such want of care; but no such proof was found in the record, and the judgment was affirmed.

CHILD MURDER—PROOF OF BIRTH ALIVE.

In a prosecution for murdering a child at birth the Tennessee Supreme Court holds, Morgan v. State, 256 S. W. 433, quotes the definition of murder as contained in the Tennessee Code as the killing of "any reasonable creature in being," which is the common-law definition as given by Coke and Blackstone, and holds that, in such a case, in order to become a "reasonable creature in being," a child must be born alive. "It cannot be the subject of a homicide until it has an existence independent of its mother. It is usually said that the umbilical cord must have been severed, and an independent circulation established. Ordinarily, if the child has breathed, this would show independent life. But this test is not infallible. Sometimes infants breathe before they are fully delivered, and sometimes they do not breathe for quite a perceptible period after they are delivered. Generally, however, if respiration is established, that also establishes an independent circulation and independent existence."

The court also pointed out that it is not necessary that the injuries inflicted upon a child which cause its death be inflicted after its delivery. The child must be born alive, but if, after birth alive, it does by reason of a potion or bruises received in its mother's womb, it is "murder in such as administered or gave them."

It has always been difficult to procure conviction in cases like these, the necessary evidence being hard to obtain.

WHERE SURGEONS HELD LIABLE FOR NEGLIGENCE OF HOSPITAL NURSE DURING OPERATION

The Oklahoma Supreme Court holds, Aderhold v. Bishop, 221 Pac. 752, that where a patient engages the services of a firm of surgeons to perform a surgical operation for the removal of a goitre, and goes to an incorporated hospital, owned and operated exclusively by the operating surgeons, for the operation, and where during the operation the services of a head nurse of the hospital and a general employee of the hospital are used by the operating surgeons in the performance of the operation, such operating surgeons are liable to the patient for any negligent act of such head nurse in respect of the service performed by her and made use of by the operating surgeons in the performance of the operation. Under such circumstances the relation of master and servant was held to exist between the operating surgeons and the head nurse during such time as is required for the performance of the operation, although such head nurse may not be in the regular employ of the operating surgeons. The negligence alleged was the burning of the patient's feet and ankles by contact with a pan of hot water used during the operation, or by water dripping from cloths immersed therein.

LIABILITY OF PHYSICIAN FOR INJURY TO PATIENT FROM HOT WATER BOTTLE HELD FOR JURY.

A physician is not liable for the negligence of a nurse who is not employed by him, but where the negligence charged is that of the physician in placing his patient after an operation upon a hot water bottle which should have been removed from the bed, it is for the jury to say whether he was negligent or not. Hale v. Atkins (Mo. App.), 256 S. W. 544.

X RAYS IN EVIDENCE TO SHOW DETERIORATION OF INJURED HAND.

In an action for injuries to plaintiff's hand smashed in a mangle, certain x ray photographs of the hand were introduced showing the progressive stages of its deterioration and the nature and extent of the injury caused by the compression and great heat of the mangle. It was urged that these photographs performed no office as evidence in the case, since the injury was admitted, and the only effect of the photographs was to inflame the passions and prejudices of the jury. It was held, Bledsoe v. Capital City Laundry Co. (Mo. App.), 256 S. M. 1076, that the photographs were essential evidentiary matter to disclose the nature and extent of the injury, as to which the evidence conflicted, and the progressive deterioration of the hand.

BAR OF STATUTE OF LIMITATIONS TO PHYSICIAN'S ACCOUNTS.

In an action by a physician against the estate of a patient who had died, the account, which was itemized, had run from 1906 to 1921, and the only question was whether or not the items, except the last four, were barred by the Oklahoma Statute of Limitations. If the account was a mutual open account, the bar of the statute would not commence to run until the date of the last item; but if a simple open running account, it would commence to run from the date of each particular item. The Oklahoma Supreme Court held, Sharp v. Miller, 221 Pac. 747, that it was not a mutual account, under the rule that an account consisting of items on one side and only payments on the other is not a mutual account, in which each party has a demand or right of action against the other. There being no ratification by the patient during his life or waiver of the statute of limitations, the items were held barred.

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The Modern and Technical Study of Heredity*

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Heredity is a name given to a biological process, by which the characters of body and mind are transmitted from parent to offspring. The study of heredity includes a study of the biological process itself, which is an analytical and synthetic attack, and a study of the clinical phenomena of heredity, which is a descriptive attack.

Very properly, yet only recently, heredity has been taken up by the biologist and become a laboratory study. In the biological method of studying heredity, there have developed new terms and a modern discussion on heredity involves almost a special vocabulary. It is my purpose to indicate the lines of work that are being followed just now in these biological studies of heredity and to give such descriptions of laboratory work and terms as may help to interpret our clinical observations and make them contribute effectively to the science of heredity as a whole.

Heredity is one phase of the more general subject of genetics, a science which deals with the coming into being of organisms and which includes not only parental influence, but all environmental influences which in some way affect the bringing into being of a new organism or race (1).

Many students of heredity enlarge their range and call themselves geneticists.

And it would be wise for us who are studying the inheritance of nervous and mental diseases to take the attitude of the geneticist and consider the factor of environment also in so far as it relates to our subject.

In accordance with the definitive character of my remarks, I would like to state what I think should be clearly in mind, when we speak of inherited disease:

Inherited morbidity shows itself in three ways, viz., as inherited organic diseases, as inherited functional disorders and as inherited constitutional predispositions. Inherited morbidity in all these forms must be an inborn heredity. Diseases started during prenatal life, by trauma, infection or malnutrition, are not technically hereditary through these causes. In this sense, there is really no hereditary syphilis or hereditary tuberculosis. But there may be inherited predisposition to these and many other morbid conditions. Inherited abnormalities and defects are often classed as inherited disease and an exact distinction can not always be made. Thus many of the familial diseases might be called abnormalities or mental defects.

Abnormalities of development are often produced by some accident during fetal life, and are not to be classed as inherited disease unless they are passed on later in the form of familial diseases. The fact that particular abnormalities are not necessarily inherited is to be considered in studying hereditary monstrosities, and defective neuropsychic characteristics. Feeblemindedness, for example, is probably often due to a prenatal injury, not to an inheritance and is not necessarily transmitted.

BIOLOGY AND GENETICS

In studying the inheritance of disease, we must pay due weight to the work of the biometricians and the school of Galton. At one time there was great antagonism between the latter group and the Mendelians. It has been stated that, according to Pearson, no inheritance is Mendelian; while according to Davenport all inheritance is Mendelian. Of late this situation has somewhat changed. The grounds covered have become somewhat different. The biometricians deal with statistics and mathematics in relation more especially to the general problems of population and social life. The Mendelians are dealing with the living cell and its mechanisms in relation to heredity. The biologists in studying heredity seem now for the most part to be working along Mendelian lines. Their work involves a great deal that is highly technical and it has adopted a stupendous vocabulary. It is, however, extremely interesting and is a vital phase of the science of inheritance. So I would like to refer to some of its data and methods.

In the substance of the cytoplasm of a plant cell is a nucleus which contains a chromatic network that breaks up into granules and pairs of bodies called chromosomes. Every cell of the body has a constant number of paired chromosomes, and they are one half from the male and one half from the female.

*Read at a meeting of the Association for Research in Nervous and Mental Diseases, December 26, 1923.

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They are supposed to carry "factors" that determine the characteristics of heredity, e.g., tallness, shortness, albinism, pigmentation, etc. This special factor is called a "gene" or "id." It is of the nature of an enzyme, secreted by the nucleus. A gene has no anatomy and no chemistry; it is spoken of as a "mood"; but it is a structural peculiarity in the chromosome and it occupies a particular part of the chromosome. A gene for color is one which causes pigmentation, while in the absence of this color gene there is albinism. Changes in the genes are the cause of variability in inheritance or "mutation" (2). There is a number of these genes in a chromosome; they vary in character and this explains blending of inheritance. Thus where a black rabbit is mated with a white one, a gray colored rabbit results, there being at least five different kinds of genes in the chromosomes.

It is believed that chromosomes never fuse absolutely, and on this fact it is inferred that individual characters are not actually blended, but that the hereditary characters making up a personality, or a defect or a disease, are the results of the segregation of individual unit characters, anatomical or functional.

MENDELISM

These biological data bring us to the subject of Mendelism, which seems to be widely accepted now as the basis of the biological mechanics of heredity. The essential features of Mendelism as it affects our problems are, that an organism is made up of unit characters and that a real blending does not take place in the reproduction of offspring. Hereditary characters, to put it more explicitly, are independent units (usually) which segregate upon the fertilization of the female by the male, regardless of temporary dominance. (2). This general statement can be elaborated into two specific laws:

First, the law of dominance: When two organisms of different unit characters are crossed, hybrids result and these hybrids are all apparently alike and have the character that is dominant in one of the ascendants, i. e., they are all tall or short, etc.

Second, the law of segregation or disjunction: If these hybrids are bred together, their offspring, forming a third generation, will consist of fifty per cent. which are like their hybrid parents, twenty-five per cent. like the male procreator and of pure stock, twenty-five per cent. like the female and also of pure stock. If S represents the original male and s the female, the formula for the grandchildren is S+2Ss+s.

The main points viz., that of the unit character of inheritance and of the influence of the dominating and recessive qualities, may be shown in the following illustrations: Assume that: M is a dominant character (assume it to be "hereditary chorea"). Assume that N is a recessive character (i .e., "normal neuromuscular mechanism"). Now if one breeds M N with N N there results fifty per cent. M N plus fifty per cent. N N, which means one half are sick, one half well, or if N is dominant all would be well.

Suppose further that M is recessive and N dominant, then breeding two hybrids M N with M N gives twenty-five per cent. M M plus fifty per cent. M N plus twenty-five per cent. N N equal one half sick, three quarters well. (See *Apert L'Heredite morbid*, 1919.)

The data concerning inheritance have been worked out especially in plants and lower animals. They apply in a measure to certain special human characters that may be considered unit characters, such as pigmentation, polydactylism, and perhaps other anatomical characteristics. Tallness and shortness are unit characters in the pea, but in man tallness involves the internal secretions and conditions of nutrition and metabolism that make their quality quite complex. The familial diseases, being really defects more than diseases, are supposed to show Mendelian traits. In fact Mendelism can be applied perhaps more definitely to human defects than to disease.

But on the whole, neurologists and psychiatrists must at present expect to get most help in studying inheritance of disease from the biometrician, from clinical observation and a study of the environment. The application of Mendelian laws to the inheritance of human disease means a long wait.

The following are some of the technical terms in connection with Mendelian heredity:

An allelomorph is a pair of characters of which one is dominant and one recessive. When such a pair is bred, the result is 1+2+1, 1 being pure dominant, 2 hybrid, 1 pure recessive.

A gamete is a mature male or female cell ready for maturation. A gamete is a marrying cell.

A zygote or yoked cell is a fertilized cell formed by the union of two gametes; it is a married cell.

The gene is the factor in the chromosome invisible and undemonstrable anatomically or chemically which gives form and substance to a definite visible unit character in an organism.

A homozygos character is one which is present in the offspring in double quantity because it was present in both parents.

A homozygote is an organism which is homozygous (double dose) with respect to any character.

A heterogote is an organism which derives the determiner of its character from only one parent.

NOSOLOGY OF INHERITED DISEASES

I would now like to call attention to the classes of nervous and mental disease to which laws of inheritance are to be applied; they are: Familial diseases, or diseases of similar heredity. These are diseases which have been evolved into a family and become part of its chromosome pattern. Familial diseases are those which tend to create out of apparently normal individuals a type that is abnormal and one that is degenerate in character.

The familial diseases are characterized as follows:

a. There habitually develop several subjects of the diseases in the same generation.

b. The cases develop in the same way and with the same characteristics.

c. They develop out of a constitutionally neuropathic constitution and independent of any external pathogeny.

d. They are rarely cases of direct heredity, i. e., passing from father to son, etc.

The principal familial diseases are: Heredity ataxia of Friedreich; congenital familial

bleheroptosis (Moebius); familial spasmodic paraplegia; amaurotic idiocy (Tay-Sachs); familial or hereditary optic neuritis; the progressive myopathies; familial periodic paralysis (Westphal); familial nocturnal enuresis; essential or familial polyuria; essential hereditary tremor; chorea of Huntington.

Apert makes the following groups of hereditary nervous diseases:

Familial diseases with a continuous heredity—Here the disease is transmitted from parent to child and never skips a generation, e. g. Huntington's chorea.

Fraternal familial disease—The patients are the children of healthy parents, but one finds the disease in a collateral ascendant like an uncle.

Diseases of matriarchal heredity—Here descendants of affected males always escape, and only those descendants of the common stock on the mother's side are affected. In some cases the disease is perpetuated in continuity from mother to child, the daughters always carrying the malady. This is seen in familial periodical paralysis and Daltonism. The disease also can be perpetuated by the female who does not have the disease, as in familial papillary atrophy or hereditary optic neuritis. In these cases the disease has the character of a dominant.

DISEASES OF DISSIMILAR HEREDITY

In diseases of dissimilar heredity, there is a transmission of a morbid aptitude, i. e., a constitutional predisposition to a nervous disease, but the disease transmitted may be the same or may be different in the offspring from that of the parent. Illustrations of this are families in which there may appear one or other of such maladies, as epilepsy, migraine, the psychoneuroses, Basedow's disease, and family tremor. The constitutional psychoses, such as those of the manic depressive and dementia precox types, morbid alcoholic craving and similar constitutional states of dependency on defective inhibition. The mechanism of the transmission of these morbid aptitudes, is one of the objects of biological research.

There is a large class of diseases in which poisons or infections during prenatal life induce enfeebled or neuropathic constitutions, which make the descendant liable to acquire the parental disease. Such diseases are tuberculosis and syphilis. These are not cases of the heredity of nervous diseases and their study comes more properly under the head of congenital disease.

It seems, however, possible that defects or anomalies in the nervous mechanism produced prenatally by certain accidents, may be inherited, indeed it is only in this way that we can explain the origin of the familial diseases.

Characters acquired prenatally, may be transmitted but, despite Prof. Kammerer, is seems to be still pretty well agreed that in the higher animals, characters acquired postnatally are not inherited.

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A Scourge of Hemolytic Streptococcus*

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The pandemic of respiratory infection due to the hemolytic streptococcus which swept over the world during the World War, called for convenience influenza, is only too easily remembered and constitutes to those of us who passed through it one of the most ghastly and fearsome experiences which can come to a medical man. Even during the Civil War it was observed that the troops from remote country and mountainous regions, where contact with others was infrequent, were soon stricken with those diseases ordinarily associated with childhood, when they were brought into camps and grouped with many others. Not only was the incidence large but the severity of the infections and the deaths from complications were especially marked. Similarly, during the World War, these same diseases were prevalent and for the same reasons, but in addition the grouping together of so many thousands, frequently under most adverse climatic conditions, rendered the contagion almost certain to spread. To the danger of this condition was added the hemolytic streptococcus as a complicating secondary invader, and this organism, instead of being attenuated by passage through so many hosts, was rendered more virulent and not only conferred no lasting immunity, but converted those who escaped death into carriers. In fact, they became

*Read before the District of Columbia Medical Society, March 6, 1924.

a distinct menace to the public and at times were themselves sensitized to attacks of infection dependent on the presence in their throats of streptococci. During the past five years this condition has become increasingly dangerous and I think it will be five more years at the least before it can be brought under any control.

The family with whose trying experience this paper is concerned had no inherited or acquired taint of any sort and all of them led the simplest, most hygienic lives possible. They slept out doors, got ample sleep, had no digestive irregularity, were never constipated and were as nearly normal as any family can be under present living conditions in a city such as Washington.

FIRST EPIDEMIC

The first invasion lasted from December, 1918, to February, 1919, resulting, during the two months, in five cases of influenza, one of lobar pneumonia, two of middle ear abscesses, one of suppurative ethmoiditis, and one of impetigo.

Case I.—A. N. D., mother of five children, all healthy, contracted influenza (i. e., streptococcic pneumonitis), rapidly sinking into a comatose state on the third day. Her condition was critical from the first, and she was not expected to live after the fifth day. She was often pulseless. Was transfused three times with socalled immune serum. On the twelfth day she regained consciousness for a while, but was frequently irrational. Recovery without complication after two months in bed.

Case II.—T. D., a boy of eight years, was infected a few days after his mother. Lobar pneumonia developed a week later, with apparent convalescence in ten days, but relapse a week later. Area of dullness on one side, thought to be fluid, was aspirated with negative results. Recovery in two weeks without complications, though he complained for some months of pain in side, apparently from pleuritic adhesions.

Case III.—W. N. D., a boy of four years, came down with influenza the same day as his brother (Case II). Prostration was severe for a week, at which time a severe otitis media developed; drum was incised and the discharge was free for ten days.

Case IV.—F. N. D., a girl of three years, was taken sick the day after the patient in Case III, with marked toxemia from the first; prostration was grave. Recovery in ten days, at the end of which time an acute otitis media developed. The drum was incised; ear was dry in ten days.

Case V.—L. D., a girl of eleven months, contracted mild influenza, but a virulent infection of the ethmoids. Both eyes were nearly closed, pus streamed from both nostrils, requiring suction three times a day; temperature for three days at 4 p. m. was 102°. Recovery in two weeks. (The nurse who held this child in her lap for hours at a time did not contract any infection of any sort at this time, but two years later died of a hemolytic streptococcic infection of the larynx and heart valves. This case will be reported at length later on.)

Case VI.—P. D., a boy of six years, had been sent away as soon as the epidemic struck down his mother and brothers and returned to the house after all were well and the house well cleaned, only to manifest an extensive impetigo of the face and hands. This it is well to remark, is a streptococcus infection of the skin. Incidentally he was the only one of those infected by this organism whose tonsils had been removed, and he escaped with only a skin infection. This point is worth remembering when a consideration of the etiology in this family's epidemic is reached.

In attempting to prevent the spread of the infection in this family isolation was at first attempted but later abandoned as it proved useless and added to the difficulties of care and nursing. However, ventilation was rigidly enforced in all rooms containing the sick. From every discharging ear in this group and from every nose, throat and mouth was secured many times the hemolytic streptococcus, which organism constituted about ninety per cent. of the bacterial growth in the tubes, the remaining organisms being the staphylococcus aureus and the fusiform bacillus. However, from the middle ear discharge the growth was purely the hemolytic streptococcus. As the tonsils seemed healthy, small and showed no secretion or crypts, their removal was not contemplated, nor were any cultures taken, as I regard a surface culture of a tonsil as perfectly worthless. Such a culture, if negative, would not exclude the necessity of removing the tonsils, and, if positive, would not necessarily indicate the necessity for removal. About the only reason I can see for such routine cultures which many laryngologists make is to frighten a patient into having the tonsils removed as every tonsil will yield a flora that when listed on paper will put the fear of the Lord in the heart of a patient who is ignorant of the fact that every tonsil will show on its surface a formidable array of bacteria. Thus, these patients had for a year and a half an uninterrupted period of excellent health with no clinical tonsil symptoms whatever. However there occurred a second invasion.

SECOND EPIDEMIC

In February, 1921, the second invasion occurred resulting during three weeks in two cases of mastoiditis, one of abscess of the larynx, one otitis media one impetigo, one scalp abscess.

Case I.—A. N. D., the mother, came down with a violent earache; the drum was incised within two hours of the beginning of the pain, but despite every effort the case went to operation on the eighth day. For two days the evening temperature touched 105° and then declined very slowly, and there was a sustained evening temperature of 99.2° and 100° for four weeks. This was a typical hemorrhagic infection.

Case II.—B. B., colored nurse to the children, complained of malaise, but did not go to bed as she felt she was so badly needed that she wanted to keep going. In two days, however, she had to give up and her hoarseness and brassy cough were marked. Her fever touched 104° and her breathing became so labored that she was taken to the hospital. Examination showed an enormously enlarged epiglottis, edema of the base of the tongue and a foul, watery discharge bathing all the parts visible. She was also able to raise a little of this from below the glottis. Under appropriate treatment in twenty-four hours she was much improved, the edema so far receding

as to allow a view of the cords, not possible the day before. In two days her temperature dropped to normal and she seemed certain to recover, though she could not talk above a whisper and still had some difficulty in swallowing. I was called at four in the morning and found her sitting up in bed, her respiration very difficult and her pulse intermittent, but I feared to wait and did a rapid tracheotomy with apparently good results. However, she lapsed into unconsciousness and died in four hours from acute cardiac dilatation. Thus, the dyspnea was not of tracheal origin but cardiac; in fact, most of such cases are of this type. There was no sign of a deep cervical abscess, and no collar of induration was present.

Case III.—T. D. Just before this boy's mother went to the hospital for her mastoid operation, he had both ears opened after an earache of only half an hour's duration. However, he came to operation on the fourth day with typical findings, but his convalescence was much smoother than his mother's, probably due to the fact that he did not become so toxic before operation, and this, too, despite its being a bilateral operation.

Case IV.—P. D. Three days after his brother's infection began, this boy had his drum opened and the discharge was so profuse and the local disturbance so extensive that several times the necessity of an operation on his mastoid was debated. The discharge was maintained for two weeks.

Case V.—L. D. This three year old child seemed destined to escape the infection that had caught the others, but three weeks after the beginning of this second invasion an extensive impetigo developed on the face and minute abscesses about the roots of all the nails of one hand and three fingers of the other. Apparently she infected her scalp, for an immense, dissecting abscess developed there just over the posterior occipital protuberance which required a wide incision and dressing for nearly six weeks.

Case VI.—W. N. D. Five months later (July-August) this boy began to show an evening temperature of 99° to 100° and kept this up for six weeks. He did not appear or feel ill, but all examinations were negative till we searched the tonsils, where a deep crypt was found. This kind of evidence was not conclusive to me, but after the experience of this family with the hemolytic streptococcus the removal of the tonsils was determined upon.

In the spring of 1922 the tonsils of the mother and four of the children were removed, despite the absence of any gross disease, crypts or hypertrophy. Probably cultures would have revealed many bacteria, among them the hemolytic streptococcus, but, as I had no intention of being guided by the presence or absence of these organisms secured by surface swabs, I decided that the clinical aspects of the cases strongly suggested that they were carriers and for this reason alone were the tonsils removed. From the anterior crypts of every one of the enucleated tonsils was found in pure culture the hemolytic streptococcus. The tonsils of the mother I had many times examined and always had regarded them as very small, normally atrophied remnants, smooth and porous; yet, on separation and removal they proved to be the size of the end of one's thumb and thoroughly diseased. It is a point of speculation as to how far her two attacks of serious infection caused this degeneration, and I am of the opinion that the tonsils were healthy till these two invasions occurred. Similarly, two of the boys showed caseous material beneath the capsule and evidence of deep seated inflammation (adhesions, bands and fibrous tissue). However, the physical ordeals of this family were not yet over, for again there occurred a third invasion.

THIRD EPIDEMIC

July-August, 1923, the third invasion occurred, resulting in seven cases of sinus infection, six of influenza, and three of otitis media, complicated by suppurative chondritis.

These cases can be summarized briefly as they were so similar in course and incidence. The mother had a true influenza with moderate prostration, remaining in bed a week, the temperature never going over 100°. She got up on the eighth day and almost immediately had a relapse, with a fever of 103°, great prostration, and backache, infection of the sinuses and a distressing feeling of numbness over one side of the face, almost an anesthesia. The stoppage of the eustachian tube was absolute, with deafness and fullness in the ear. Her convalescence required six weeks. At intervals of five or six days the children came down with the same infection, though not so virulent, all five having profuse sinus infections which required irrigation three times a day. In addition, in three of them middle ear abscesses developed, with infection of the canal, pinna and periostitis of the mastoid. These attacks lasted ten days and the suffering from the chondritis was great. All the patients were thoroughly toxic and lost all that they had gained by their outing at the seashore, where they were at the time. Also, this time the father had the same sinus infection, anesthesia of the face and blocking of the tube, without any systemic infection. So far as can be now seen these three serious epidemics have left no cardiac disease, though it is possible that in the years to come the cardio-renal mechanism may prove to have been injured and some hypertension result.

CONCLUSION

In the light of subsequent events, it seems certain that after the first epidemic this family must have become carriers, yet they went nearly two years without any clinical manifestation of their condition. However, the carrier is, of course, more a menace to the community in which he moves than to himself, and it is here that the great increase in the presence of the hemolytic streptococcus can be met and overcome. On the other hand, it must not be overlooked that the carrier at times becomes sensitized to the very organism which he is harboring and then becomes a source of danger to himself. This phase is shown by the second epidemic (ear, mastoid, laryngeal and skin manifestations), though two members (P. D. and the colored nurse) did not have any tonsils. They were almost certainly infected by the other members who were carriers. Thus, this family shows vividly the several phases of the carrier problem: first, they become carriers, they then show a sensitization to and are overcome by the same organism that they are harboring themselves. Later, they infect two members of the household, despite the

fact that these two were especially resistant, being without tonsils, and who had not shown any streptococci after recovery from an infection two years before.

The third invasion is not an aspect of the carrier problem, I believe, though a very striking coincidence, as all tonsils in the family had been removed. There was a local epidemic of influenza where they were living, of the same type as their's and complicated by the same prolonged convalescence and prostration; so it was due to this condition and not any carrier element. It is true, however, that the hemolytic streptococcus did complicate the attack. I will repeat here that in all three epidemics the hemolytic streptococcus was recovered from ear, nose, throat, larynx or mouth as the case may be. Every effort was made to remove any infection that might have clung to the house itself or its furnishings, the most thorough cleaning and disinfecting of everything being done during the attacks and in the intervals between. Thus, this would appear to exclude as a cause contact with infected clothing, furniture or utensils.

THE HEMOLYTIC STREPTOCOCCUS MENACE

The frequency with which in the past four or five years respiratory, ear and sinus infections have been complicated by the presence of the hemolytic streptococcus, either as causative or as a secondary invader, and the ravages of this agent when so found constitute a definite and most serious pathological problem. The socalled hemorrhagic mastoid case of years gone by was certainly a rare form of mastoid disease as compared with other forms of infection, but it is so no longer. In my own experience certainly fifty per cent. of mastoid operations have been found associated with this agent as a direct cause of the necrosis. Moreover, so virulent is the infection here that operation is imperative often on the third or fourth day after myringotomy or spontaneous rupture. All of those who were infected during the World War or since, and who did not die and returned with their tonsils *in situ*, have been scattered all over the country and established themselves as active infectious agents in incalculable number, as they have increased by geometrical progression. Now there are certainly more infected ears, noses and throats, as well as bronchi than ever before. This widespread dissemination of a deadly organism is appalling and has proved in its concrete results of fatal illnesses due to the streptococcus that it is not merely an academic, theoretical problem, but one of vital, practical interest to the entire community. While I should regret adding to the lust for blood of those who are industriously engaged in removal of any tonsil that is visible, yet one of the incidental and accidental results of this "massacre of the tonsil," as John Mackenzie so aptly terms it, will be the elimination of many of these carrier cases. However this may be, I regard the hemolytic streptococcus in its widespread presence as a causative and complicating organism in disease as one of the most serious and pressing problems which the medical profession faces today. This can be met only by the elimination of the carrier and thorough enucleation of the faucial tonsils offers the greatest hope for attaining this end, for these glands are certainly the chief nidus of the hemolytic streptococcus in the carrier.

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The Importance of Posture in Postoperative Treatment

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When as a young student in medicine I attended the lectures of the late wellknown Professor Zenker of the University of Erlangen in the winter of 1877-78, he closed the season's last address to his class with the words: "Remember, gentlemen, prophylaxis, the prevention of disease, is the highest aim of medicine." These words were indelibly engraved upon my memory. During my entire medical life I have watched with the keenest pleasure the evolution of medicine and surgery from this point of view, and have followed with the highest admiration the incessant, often selfsacrificing work of medical men to prevent disease in all the branches of our science. I have also personally tried to do my little mite whenever and wherever possible and to live up to my esteemed teacher's impressive words.

What has been accomplished in the way of prevention of disease is known to all of us and to the world. I will but remind you of Jenner's immortal achievement, the vaccination against smallpox, and the now uniformly introduced successful inoculation against typhoid fever, diphtheria, cholera, even yellow fever, and many other infectious diseases, of which the infecting microbe has been found and cultured. So the entire apparatus set in motion everywhere, in private practice and hospital work, before and during operation, all of what we call antiseptic and aseptic surgery, is nothing but a detailed and determined attempt, founded on definite scientific knowledge, to prevent disease, to render infection impossible.

Now, just as our endeavors in surgery, preoperatively as well as during the operation, are important to prevent disease and complicating affections, so must our endeavors be constant after the operation, when the patient is being and has been returned to his bed, when aftertreatment has begun.

Of the many important factors that here come into consideration I shall at this time pick out just one —posture. Posture in all its varieties is, to my mind, one of the most powerful means at our command to hasten recovery and avoid complications. Of the various postures introduced into practice I shall here consider principally two, which I have practised for a great number of years in hospital and private work, alone as well as combined with others

—the slight Trendelenburg posture and Sims's posture, or the latter more exaggerated, the abdominal posture.

THE SLIGHT TRENDELENBURG POSTURE

When a patient has successfully gone through the immediate dangers of the operation and the first part of the aftertreatment, and he, as well as the others concerned in his welfare, feels easy and is looking forward to a speedy and uninterrupted recovery, there is still one treacherous enemy lurking in the background ready to strike at any moment—venous thrombosis.

This thrombosis usually concerns the left femoral vein, following work done by the surgeon in his everyday routine, also one or more of the pelvic veins after operations on organs within the small pelvis and after childbirth.

From a pathological point of view such blocking of the venous lumen is not a serious matter. The lower extremities and the respective pelvic organs easily stand the disturbance in the normal return flow of the blood to the inferior vena cava. Collateral circulation is plentiful and the concomitant edema of the extremity—though usually at first greatly alarming the patient and his relatives—subsides after a certain time. Its persistence is very rare. Surgeons are used to ligating the deep femoral vein, for instance, in the operative treatment of the so-called thromboangiitis obliterans, and no interference with the ordinary circulation is seen. With aseptic healing a thrombus forms immediately adjacent to the ligature and usually extends up to the spot where a lateral branch enters the ligated vein. In phlebitis the coagulation does not remain quite as local. The thrombosis forms as far as the venous wall has become inflamed and more or less edema develops in the lower extremity, at least, if the femoral vein is involved. Thrombosis in branches of the internal iliac vein may run on without any external manifestations; an unexplainable tachycardia is taken by many as the only outward sign. If the inflammation spreads to the external branch of the common iliac vein, edema of the leg and thigh may become alarming. I need but remind you of the so-called phlegmasia alba dolens after complicated childbirth.

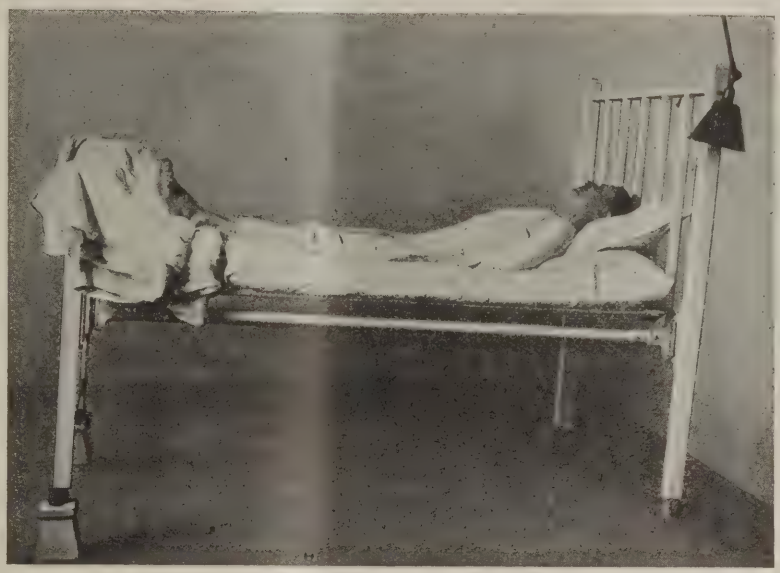

FIG. 1.—Slight Trendelenburg posture, with patient on his back, resting. This is the standard posture for all patients operated on below the level of the heart; also for weak patients, operated upon head or neck, who cannot get up early.

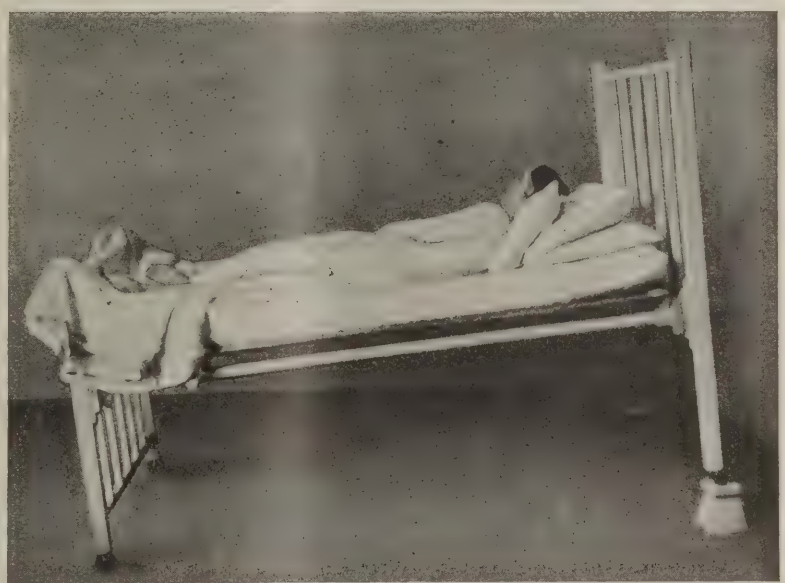

FIG. 2.—Sims's and slight Fowler's posture combined during the first three days after gastroenterostomy.

What medical men fear is the clinical sequelæ of the thrombosis: the loosening of a part or of the whole length of the thrombus, which then enters the circulation and is driven as a foreign body through the right heart into the lung. What we fear is this sudden pulmonary embolism, the sudden interruption of the normal physiological circulation of the blood between the right and the left heart by way of the lung, partially or completely, which sets in like a flash from the blue sky and is absolutely beyond the control of the attending physician.

I spoke before of the thrombosis of the left femoral vein. Why only of the left and not also of the right?

It is a clinical fact that at least ninety-five per cent. (if not ninety-nine per cent.) of thromboses of the femoral vein occur on the left side; and if both veins become involved, one after the other, that the trouble almost always starts with the left. The reasons for this peculiarity are principally anatomical.

We know from the investigations of the Freiburg

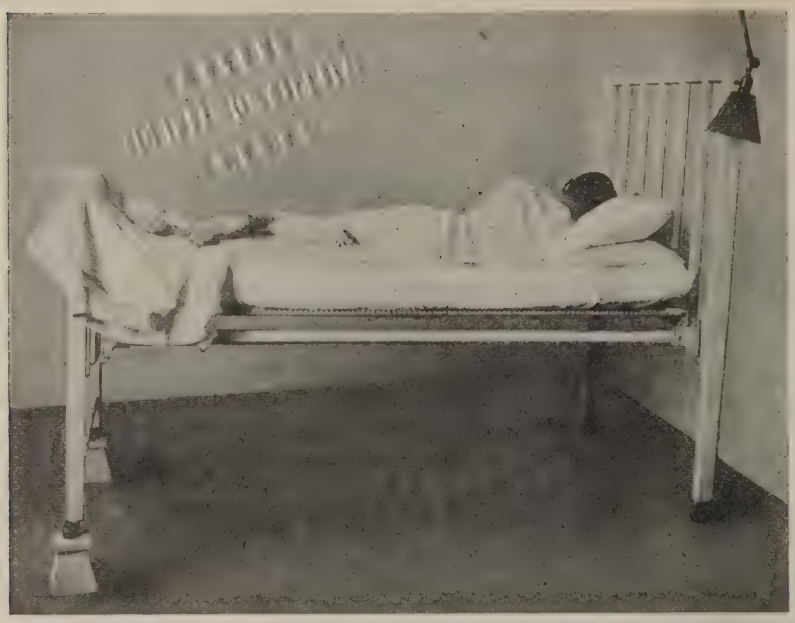

Fig. 3.—Sims's and slight Trendelenburg's posture combined, as used later on after gastroenterostomy, the degree of lateral posture, as well as the raising of the upper part of the body being left to the patient's convenience.

pathologist, Ludwig Aschoff (1) that thrombosis occurs in those portions of the venous system in which the flow of blood is retarded provided micro-organisms circulate within the blood.

With the patient in the usual horizontal posture in bed after an operation, the upper part of the body from the hips up being supported on pillows, there is no place in the body where venous circulation is more impeded than in the groin. Poupart's ligament, often strained, presses upon the femoral vein as it runs across the horizontal branch of the pubic bone. From here on the blood has to run uphill in order to reach the inferior vena cava. Further up, on the left side, the right common iliac artery or the lowest portion of the abdominal aorta crosses the common iliac vein in front of the spine, whereas on the right side the external iliac vein passes underneath the external iliac artery, a much smaller vessel, in order to reach the common iliac vein and inferior vena cava. Here also the soft belly of the psoas muscle forms the pillow on which these vessels run. The difference in the circulatory arrangement of the right and left sides is due to the anatomical fact that the inferior vena cava runs nearer to the median line than the abnormal aorta. Further, before the common iliac vein reaches the place where it has to pass under the strong and ever pulsating common iliac artery, the sigmoid flexure of the colon, usually filled with inspissated fecal matter, rests upon it for quite some distance.

These factors have been accused of being principally responsible for the clinical fact that postoperative femoral thrombosis is almost exclusively met with on the left side. It is, of course, possible that in addition to these anatomical conditions minor factors often come into play in its development. Repeatedly I have been asked, when speaking on this subject before my assistants and students, why has not this complication been seen more frequently in medical cases which have been helpless and bedridden for many months, why principally in patients that have been operated upon? My reply has been that the ordeal, which we call operation, opens up a great many ports of entry through which microbes may reach the circulating blood current. It takes time, likely a few weeks, before the slowly recuperating system gets rid of them. Usually it is the second week after operation in which the thrombosis of the femoral vein occurs.

Besides, the effect of the general anesthesia may contribute to thrombus formation. It will be interesting to watch and observe, whether regional and local anesthesia, employed nowadays in so many major and minor operations, will reduce its occurrence. Weakness of heart muscle must also be considered in the etiology of thrombus formation.

Fortunately, femoral as well as pelvic thrombosis, as such, is rare. Yet, I am sure, every busy surgeon has met with it. And whoever has gone through the worry and annoyances it has produced, particularly in private practice, will never forget it. Very vividly stands before my memory an experience of one of the first years of my surgical practice. I had been called to operate upon a patient with acute appendicitis in a private residence, and had to go ahead at midnight. The patient was the only daughter, in fact, the only child in the family. Everything went well at first, and in the beginning of the second week, when asked again concerning the prognosis, I expressed myself as sanguine and extended the hope that the patient would be out of bed a few days later. During the following night she complained of pain in the left groin, which in-

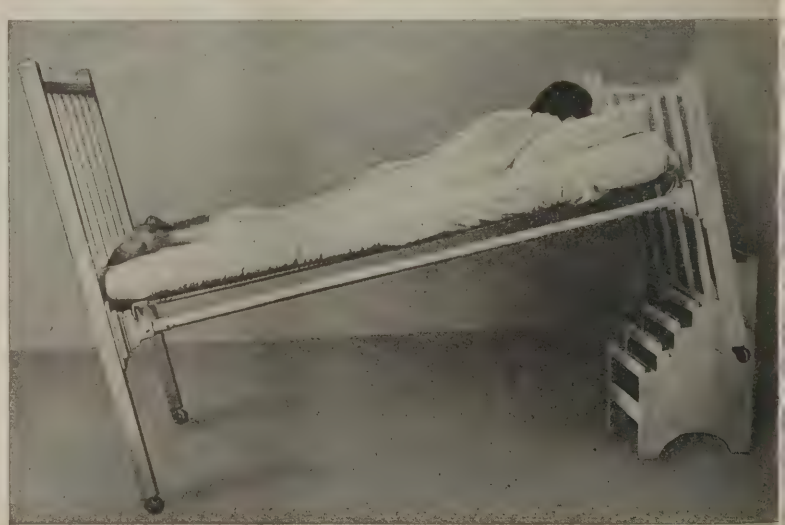

Fig. 4.—Abdominal posture combined with Fowler's, increased by raising the upper part of the bed on the steps. This is used in cases of intraabdominal perforation of any sort with large effusion, both lumbar regions and the small pelvis being drained through intramuscular stab wounds on both sides.

creased from hour to hour, in spite of an icebag immediately applied. Soon the leg began to swell, and a typical femoral thrombosis developed. Not long after the femoral vein on the right side followed suit. It was more than six weeks later before I dared to allow the patient to be out of bed. The people I had to deal with were very nice; still, I sometimes felt that they blamed me for the complication.

On looking back, several cases of thrombosis reenter my mind which occurred during the first two decades of my forty years of continuous surgical practice. I have seen it after the most aseptic surgical interferences as well as after operations for acute intraabdominal inflammations. I have seen left femoral thrombosis set in after an operation for hernia, after the radical operation for cancer of the breast, also subsequent to operations for acute appendicitis and perityphlitic abscess, following suprapubic cystotomy, etc. Never can I forget when the father of a well known colleague here in New York, after a suprapubic lithotomy done by me at his home, developed a left femoral phlebitis which evidently gradually extended farther up into the iliac vein. It was many weeks before the pronounced swelling of the lower extremity began to recede somewhat. A marked difference in the size of the two lower extremities persisted; he had to wear a rubber stocking that reached almost up to his hip and required special suspenders to prevent it from slipping down, a procedure which proved to be a great hardship for the patient. Barely two years later he died suddenly with symptoms of a pulmonary embolus.

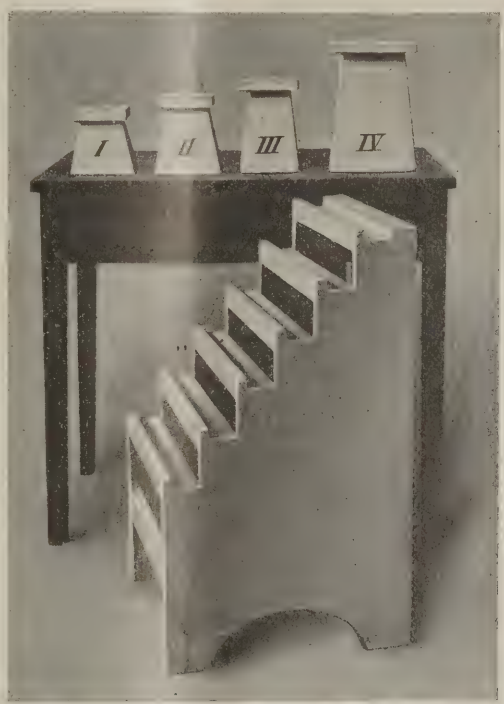

FIG. 5.—The four sizes of blocks and "the steps" as used for elevation of head or foot end of the bed at the Lenox Hill Hospital, New York. The height of the blocks is respectively five, six, seven and ten inches.

On one occasion when I was visiting a semiprivate patient of mine at the hospital I saw his roommate, who had been operated upon by one of my colleagues for a stone in the kidney, drop dead upon his first attempt to walk to the window of the room. Naturally, all concerned in the case were utterly distressed. Autopsy showed an embolus riding on the bifurcation of the pulmonary artery.

I could cite other cases of the same type, as vivid in my memory as if they had occurred today. The fact that I have also seen patients with a pulmonary embolism recover under my hands might be worth mentioning, but does not fit in the realm of the present discussion.

So much is sure, and I wish to repeat it, whoever has met with this complication in practice, striking as it does so suddenly and with unexpected deadliness later on after operations, when the patient may be up and about again and ready to leave the hospital, or sick room, will never forget it.

No wonder that it has excited the interest of many medical men! No wonder that it has been thoroughly investigated and frequently discussed! I myself wrote a brief paper on the subject twenty years ago (2) and have always tried my utmost to prevent its occurrence in my patients.

Can it be prevented? Yes. I believe it can, perhaps not absolutely, but surely reduced almost to a minimum.

It stands to reason that if we can overcome the normal anatomical impediment in the circulation of the lower extremity at Poupart's ligament and further up in the pelvis, the principal cause for the formation of a phlebitis and therewith of a thrombosis would be successfully met. This we are able to do. Just as we allow our automobile to run faster before we approach a hill right ahead of us, and then see it climb up, usually without changing the gear, in the same way we can make the blood current in the femoral veins faster, and thereby for the blood the ascent from the lower extremities to the right heart easier if we raise the lower end of the bed, that is to say, if we arrange for a slight degree of Trendelenburg's posture (Fig. 1). Blocks placed under the foot end of the bed[1] (Fig. 5) will allow the blood within the lower limbs to run down hill from the toes to the hips, and in its onrush it will easily reach the veins in the upper pelvis, nay, I am sure, often the region of the renal veins, from where the negative pressure existing in the thorax, the suction of the right heart, will substitute the decreasing velocity of the blood current.

I am absolutely convinced that this simple means of raising the lower end of the bed is the most powerful weapon we possess of preventing the occurrence of femoral (and pelvic) thrombosis. I am using it after every case of operation at or below the level of the heart, in weak patients also after operations on neck and head, if they stay in bed for some time, and can truthfully say that I have not seen the typical thrombosis of the left femoral vein occur since I started doing this. In my paper on this subject, already alluded to, I mentioned that "it would be interesting indeed if experience would show that by such raising of the lower end of the bed the occurrence of femoral thrombosis could really be prevented; that is to say, if we found that the complication occurred only in such cases where this prophylactic measure was omitted." Today I can state that this proof has been rendered.

Last year, for the first time in many years, after a cholecystectomy, I saw a patient already out of

[1]At the Lenox Hill Hospital, New York, four different sizes of blocks and "steps" are in use for obtaining the postures desired for the given case.

bed two weeks after operation, suddenly and unexpectedly die under the unmistakable clinical symptoms of pulmonary embolism. She had made a smooth recovery, except for pronounced postoperative vomiting, and had been treated as usual with elevation of the lower end of the bed. Unfortunately, the family would not allow an autopsy, much as I tried to get permission for it. Therefore I cannot prove the correctness of the diagnosed cause of death. Still, the tragic suddenness of the exitus in the midst of seeming wellbeing and the immediate marked paleness of the face spoke for it. The patient had had a number of children and may have harbored in her pelvic veins a thrombus for many years. She had not developed a femoral thrombosis during the aftertreatment.

I would like to cite another case illustrating how a prolonged Fowler's posture can favor femoral thrombosis. As will be mentioned later on, I am in the habit of treating my patients with resection of the stomach and gastroenterostomy with a slight Fowler's posture during the first few days after operation. A lady of forty, in whom I had resected a cancer of the stomach that had developed on the basis of an old ulceration according to Billroth's operation No. 2, liked the posture very much, and begged to remain in it longer than the usually allowed three days. Just at that time I had to leave town for a few days, and thus it occurred that she had the head end of the bed raised on blocks for ten days. At about that time she began to complain of pains in the groin and tenderness over the left femoral vein. She soon also developed some edema of the extremity. Of course, the position of the bed was quickly changed, but the annoying symptoms of the femoral thrombosis lasted longer than any other sequelæ of the operation.

I would also like to mention an observation recently made in two patients, one after posterior gastroenterostomy for duodenal ulcer, the other after an operation for a gangrenous appendix. In both cases a painful swelling occurred in the soft parts of the left leg, accompanied by fever and tenderness over the calf, which developed two to three weeks after the operation, and could not be diagnosed otherwise than representing a deepseated localized phlebitis between the muscles of the calf. In both the lower end of the bed had been elevated continuously since right after the operation. Both patients got well after about two to three weeks without any further untoward symptoms.

A third case of the same type I saw recently in the practice of another colleague. This patient, too, got well.

The favorable preventive effect of "posture" has for many years been methodically assisted in every one of my operative patients by frequent motions, particularly of the left lower limb—I call it bicycle riding in bed—and by deep and frequent breathing exercises during the first one to two weeks after the operation. This latter addition I consider particularly important.

As stated already, it is possible that other factors may play a rôle in the development of venous thrombosis besides the usual horizontal posture of the patient in bed, for instance, the anesthetic. It is a fact that in some patients the expiratory air still smells of ether or anesthol on the second or even the third day after the operation. It stands to reason that the elimination of the anesthetic from the system by way of the blood in the lungs will occur more quickly if we insist on regular, slow, frequent, and deep breathing exercises immediately after operation and also later on. In the first days the anesthetic will thus leave the system faster; later on, the methodic breathing, done principally under the supervision of the attending nurse, may prevent pneumonia, particularly in the old. None of us ventilate our lungs sufficiently. The reason is that we have too much lung—five lobes. The exchange of gases physiologically necessary to sustain life can well be sustained by superficial breathing. Were it not for an occasional sigh or a hearty sneeze many of us would not breathe deeply for months. Yet what a sensation of comfort and satisfaction is produced by a deep inspiration. Just think of our vacation time, gentlemen, when we stand on the deck of an ocean greyhound or float in a boat on one of the mountain lakes, how thoroughly every one enjoys the benefit of a deep inspiration! We should also enjoy it in the midst of our busy lives. Just pause and breathe deeply. There certainly will be less chance for atelectasis. By all means we all should make it a point to instruct our patients who have been operated upon to practice methodical deep breathing.

In weak patients and also after severe intraabdominal and intrathoracic work I have added for many years to the precautionary methods, already alluded to, a prophylactic subcutaneous stimulation of the heart muscle by means of camphor, caffein, digalen, or digifolin and other preparations, beginning methodically immediately after the operation and continued for a number of days. Later on the same medication by mouth is resorted to.

I certainly can truthfully affirm that femoral thrombosis is unknown in my division in the hospital and also in my private practice since the strict and methodical application of the previously mentioned procedures have been practised by me during the last twenty years.

SIMS'S POSTURE, ALONE, AND IN COMBINATION WITH FOWLER'S AND TRENDELENBURG'S POSTURE

I still mention briefly the beneficial effect of another posture which I have been using in postoperative treatment of my patients for many years, that of Sims. Of the postures that are at our disposal during and after operation, Sims's posture is surely one of the most useful I know of.

Personally, I believe that a patient with acute gangrenous appendicitis, with its frequently present seropurulent or purulent effusion into the peritoneal cavity, fares best if the abdomen is drained with the help of Morris's cigarette drain, which carries a rubber tube in its centre, or has an additional entire or lengthways split drainage tube—I call the latter a gutter drain—attached outside. I put this drain into the lower end of the usually practised pararectal incision down to the bottom of the same pelvis and close the wound by layer sutures; I also place one or two stitches below the drain in the low angle of the peritoneal, fascial, and skin wounds, so that after removal of the drain, mostly in the course of the

hird day after operation, the buttonhole in these issues can easily close.

I am absolutely opposed to closing up the patient's bdomen after removal of the gallbladder. I believe he surgeon has not the right to take chances with is patient's life for the mere pleasure of seeing the bdominal wound heal by primary union throughout r for the sake of simplifying the immediate after-reatment for the patient as well as for himself. One undred consecutive patients with a cholecystectomy vound closed up airtight and watertight may recover moothly; and the hundred and first may die for no ther reason than that the abdomen was not drained, f the ligature on the stump of the cystic duct gave way and bile containing microbes suddenly entered he closed peritoneal sac. I am furthermore of the pinion, so far as cholecystectomy is concerned, that t is for the best interests of the patient if we start he removal of the gallbladder from the fundus oward the cystic duct and not in the opposite direc-ion. Just look at the beautiful illustrations given o the profession by Eisendrath of Chicago, exhibit-ng the great variety of anatomical relation between he cystic artery and the bile ducts, also the great ariety in the course of the cystic duct with regard o the common. No one can foretell whether any ne of the many anomalies is present in the case just t hand. A good exposure of the junction of the ystic and hepatic ducts will show clearly the fas-inating anatomical relations; it will also permit the urgeon to place the ligature close to the common luct and thus render absolutely impossible the re-ormation by nature of a smaller gallbladder after holecystectomy, which some surgeons claim to have bserved. Starting the excision of the gallbladder rom the fundus usually means more bleeding in the allbladder bed. It is quickly and easily controlled —best, to my mind—by an aseptic gauze tampon, hich during the operation is compressed by a blunt etractor held by the second assistant, and which ater on, together with the cigarette drain, that is ntroduced down near to the ligated cystic stump, is urrounded by a piece of rubber dam to prevent ad-esions. These three items form my way of drain-ge after cholecystectomy.

If, now, we place the patient in Sims's posture mmediately after he has reached the bed—or, better till when he is lifted from the operating table on he stretcher to be removed from the operating room nd wheeled back to his bed—the bottom of the small elvis after an operation for perforative appendicitis nd the cystic duct stump after cholecystectomy is the ighest point of the drainage system inaugurated nd not the lowest. Blood serum, wound secretion, ften also bile from the gallbladder bed or a leaking ystic stump, will now run down hill to the outside ver the shortest route possible, not uphill. I insist n the continuance of this posture for the first ghteen to twenty hours, when a slight turning of e body to the left is permitted. On the third day ter the operation the patient may permanently take e usual position on the back; that means at a time hen the principal normal wound secretion has ased. During these first few days the foot end the bed is not raised because we all like to avoid aving any wound secretions sag toward the sub-renic space from where absorption into the general circulation is favored. At the end of the third day the foot end of the bed is raised on blocks.

It is my belief that by looking ahead and always considering safety first to be the solemn duty of the surgeon, the majority of the patients will do well under this treatment after cholecystectomy. The statistics of many individual men nowadays show that of one hundred patients with interval operation for appendicitis and also for acute appendicitis—the latter being done within the first twelve to eighteen hours after the onset of the attack—one hundred get well. Similarly we see in one hundred cholecystectomies, ninety-eight patients (if not ninety-nine) recover. A death is usually due to an accident. I believe that drainage aided by Sims's posture, and later on by a slight Trendelenburg posture, if generally adopted, would contribute to make such results universal.

I proceed in exactly the same way if, in addition to cholecystectomy, the hepatic or common duct is to be drained, or if gallbladder and duct require drainage.

Another operation which in its immediate results is, I think, greatly benefited by Sims's posture is gastroenterostomy. In posterior gastroenterostomy I always join the short loop of the jejunum to the stomach in such a way that the current in both organs runs in the same direction. What is then more plausible immediately after a posterior gastroenterostomy than to turn the patient into a not too exaggerated right Sims's posture and at the same time to slightly raise the head of the bed? (Fig. 2). I know from experience that the patients like this position. Although later on in the aftertreatment I often repeat to them that they may well stay on the back, I find the majority of them favoring the right lateral posture. Certain it is, that I see very little if any vomiting after my gastroenterostomies. Whether or not this is partially due to the posture, I am not quite ready to decide, although I believe it is. An important contributing factor is that for years surgeons have practised the attaching of the stomach, and not of the jejunum, to the rent in the transverse mesocolon. The socalled and much dreaded vicious circle is no longer seen.

Remembering that a thrombosis of the left femoral vein—should it occur—makes its appearance not earlier than the second week following the operation, I never keep the head end of the bed on the blocks longer than up to the third day—at the utmost up to the fourth day—after the operation, the time peritoneal secretion ceases. The assistants and nurses know that by that time the blocks have to wander under the foot end of the bed.

I insist on continuing keeping the foot end of the bed raised until the patient gets up. As soon as he is allowed to be up and move about the blocks are removed and the normal horizontal position of the bed is resumed. I am never influenced by the requests of the patients to change these tactics. To questions of why I insist on the posture, I reply with the statement that I am willing to tell them when they are ready to leave the hospital. To many I have had to explain the why later on; others forget to ask about it again.

Only temporarily is it allowed to put the foot end of the bed down; that is, in those exceptional cases

where some difficulty is experienced in urinating when the foot end of the bed is raised; often the same patients are also unable to void in the horizontal posture, but some certainly can easier relieve themselves if the bed is lowered. To allow the bladder to distend as much as possible I have always found to be a splendid policy. In my division we defer the postoperative use of the catheter as long as possible, especially with the male, without, however, being too hard on the patient. I cannot agree with those surgeons who demand catheterization if the patient has not voided within eight to ten hours after operation. Now and then we could well temporize until thirty to thirty-six hours after operation, when the patient urinated spontaneously, and then passed only 350 to 400 c.c. Why use a catheter for such a small quantity, which frequently did not bother the patient to carry in his bladder in the midst of well being! After all, catheterization, no matter how carefully and how aseptically done, means for the patient—at least for the male patient—an additional interference which if avoidable means another asset for him.

I have before mentioned Sims's posture combined with a slight Fowler's or Trendelenburg's posture. I am much in favor of combining postures, and let the degree depend upon the amount of infection and extension of the intraperitoneal effusion. We all recognize the great service the late and much lamented John B. Murphy has done to suffering humanity with his systematic rectal instillation, the patient being in an exaggerated Fowler's posture, in cases of general septic peritonitis after intraabdominal perforation of any sort. Special beds, useful ones indeed, have been constructed to make this posture comfortable and practical. Usually we can get along with a simpler arrangement. In cases of this type, if we drain at the same time, I have for years been in the habit of combining Sims's with Fowler's posture. If the lower abdomen and small pelvis was found filled with infected fluid, particularly after perforation of a gangrenous appendix or gallbladder, a duodenal or gastric ulcer, the perforation in the latter occurring shortly after a meal, we make a stab intramuscularly in both groins, introduce through it a drain into the small pelvis and the respective lumbar region, and then turn the patient right upon his abdomen, at the same time raising the head end of the bed on the slightest blocks (Fig. 4). I feel sure that the convalescence and recovery of some of these patients has been greatly favored by this procedure.

In this connection I must still briefly discuss the claim that the right Sims's posture employed immediately after operation, with the patient slowly recovering from the anesthetic, favors the appearance of a postoperative pneumonia, which latter complication is so often seen affecting the right lung. I do not believe in the correctness of such an assumption. During all my experience, particularly in former years, I have kept old patients after suprapubic cystotomy or prostatectomy with drainage of bladder and prevesical space in the Sims's posture, without remembering to have seen pneumonia more readily appear in its wake. It is true the order given in these cases always has been to change the posture from right to left, or vice versa, every six to eight hours. However, it has often happened in the course of the first day that the patient desired to remain on his right side—provided this happened to be the first in which he had been placed—yet no pneumonitis was observed. On the contrary, if combined with early breathing exercises, beginning as soon as the patient comes out of the anesthetic, I think that only benefit will accrue from the arrangement which has been discussed.

As already mentioned, I have gone even a step further in the course of the last three years, commencing the Sims's posture immediately after operation, viz., while the patient is still in the operating room. In January, 1918 I did a posterior gastroenterostomy for duodenal ulcer on a private patient. The anesthetic was given by a specialist who is rightly considered an authority in this line not only in New York and our country, but the world over. On the trip from the operating room down the elevator to the respective floor of the private building, with the patient lying on his back on the stretcher, he vomited the bloody contents of his stomach so suddenly and in such quantity and evidently, unfortunately, coinciding with an inspiration, that even the usual, most careful vigilance of the accompanying anesthetist could not prevent the partial flooding of the trachea and upper bronchial tree. It required considerable continuous careful attendance before free respiration was restored, not to speak of the anxiety endured before we knew definitely that an aspiration pneumonia would not likely set in. Later, discussing this occurrence with the colleague in question, we came to the conclusion that it would certainly be best for the patients' interest if when they were being lifted from the operating table they were placed "immediately upon the stretcher wagon" in the Sims's posture, this to be continued in the bed. We felt that then aspiration of the stomach contents, however small in volume, could not occur, because everything regurgitated from the stomach would, on account of gravity, have to flow to and out of the lower angle of the mouth.

The same holds true for stomach lavage, postoperatively, in cases of acute dilatation as well as persistent vomiting, or, anteoperatively, as, for instance, in retroperistalsis due to intestinal obstruction. Here Sims's posture combined with a slight Trendelenburg posture is a most valuable preventive of aspiration into the lung.

To prove the correctness of the contention that immediate postoperative Sims's posture arranged on the stretcher at the time of the patient's return from the operation and then continued in bed does not favor the development of pneumonia, but will rather prevent it, I would mention that I have been told that one of our large city hospitals has adopted this posture immediately after operation as a routine and has since observed a great reduction in the occurrence of the muchdreaded postoperative pneumonitis.

I should like to continue on this most interesting subject. I have no doubt that many surgeons, here and abroad, have observed these measures to the advantage of their patients, as I have done for a great number of years. What I wanted to bring

it is, that methodical insistence on certain postures postoperative treatment will often enable us to void the eventual occurrence of serious complications.

"Prophylaxis, the prevention of disease, is the ghest aim of medicine."

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Hypothyroidism, Affective Diseases, and Intestinal Autointoxication

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There are certain easily observed signs of hypothyroidism which apparently are not known. I have observed and wondered about these points for many years and about four years ago decided that they are due to hypothyroidism. They are roughness of the skin on the pointed extensor surfaces—elbows, knees, buttocks—dandruff, and grayish coating of the tongue.

It is well known, of course, that in hypothyroidism to a high degree the skin in general lacks in suppleness or smoothness. However, there are many cases in which the skin in general appears to be in good condition but in which careful observation will reveal that in the places mentioned it is more or less rough and scaly, the scalp more or less covered with dandruff, and the tongue more or less coated. These signs are of immense value in diagnosing the numerous cases of slight hypothyroidism and are particularly of value in the differential diagnosis of simple, diffuse colloid goitre. The metabolism test is a useful procedure and I do not wish to deprecate it, but, since it is impossible to control all variable factors in all cases, it seems to be, as has been said, of least value in those cases of slight goitre in which assistance is most needed. A glance at the elbows, knees, and tongue often greatly assists. Of course, other signs, notably the temperature, should be investigated.

Under the influence of a lack of thyroid secretion the epithelial cells on the dorsum of the tongue, as on the elbows, knees, and scalp, do not drop off as they should. They accumulate and this accumulation is assisted by the depressions between the large papillæ on the posterior part of the tongue. These masses of dead epithelium are kept moist by the saliva and are infected by the saprophytes in the mouth and consequently they decay and there result the grayish coating of the tongue and a fetid breath. There is a frequent cause of a bad breath. There has been and still is a general belief that such a coating of the tongue is caused by a disturbance in the stomach but there is no scientific ground for such a belief. I have examined and treated many hundreds of cases of digestive ailments but never once have I considered a coated tongue to be caused by any stomach condition (nor have I ever made a diagnosis of intestinal autointoxication). The stomach may be disturbed at the same time that the tongue is coated but that coexistence does not, of course, establish a causal relation.

Alopecia in early life is often a sign not only of hypothyroidism but also of an anteriorly causative pathetic effectivity (1, 2). Pathetic effectivity causes diminished activity of the thyroid gland and the insufficient thyroid secretion causes alopecia. And pathetic affectivity weakens the heart which therefore sends less blood to the scalp and the insufficient blood supply tends to cause alopecia.

The diagnosis and treatment of thyroid malfunction would be much facilitated by a thorough knowledge of affective diseases as set forth in my articles (1, 2, 3, 4, 5, 6, 7, 8, 9, 10). There is an intimate relation between emotional activities of the mind, the brain, and the functioning of the glands of internal secretion. Medical science has made a too limited application of this important fact. I wish to indicate a few points. What I have called pathetic affectivity, or what has been too restrictively called vagotonia, causes a hypofunction of the thyroid gland but what I have called violent affectivity, or what has been too restrictedly called sympathicotonia, causes a hyperfunction of the thyroid gland. It should be recognized that in the majority of cases it is not primarily the hypofunction or hyperfunction of the vagus nerve or the sympathetic nerves that causes symptoms but it is the fundamental prevailing emotional tone which first affects these nerves and through them causes symptoms. Furthermore, medical writers tend to attribute to the ductless glands effects which should primarily be attributed to affective (emotional) disturbances. Emotional activities and glandular activities are bound up together. The emotional disturbances, it should be more frequently recognized, very often primarily initiate the glandular disturbances. The confounding of the effects of these two interacting systems is not surprising because the same symptoms, for example, a slow heart action and relaxed bloodvessels, can be caused by pathetic affectivity and by hypofunction of the thyroid gland but in prevalent affective diseases, be it noted, the pathetic affectivity initiates hypofunction of the thyroid. Again, the same symptoms, for example rapid heart action and excessively contracted bloodvessels, can be caused by violent affectivity and by hyperfunction of the thyroid but in prevalent affective diseases the violent affectivity initiates the hyperfunction of the thyroid. Not only do the affective disturbances thus directly affect the activity of the glands of internal secretion but by directly affecting the blood supply to these glands they indirectly affect the activity of these glands. Primary diseases of the glands of internal secretion,

for instance cretinism, are recognized properly by medical science, and, by the way, it is true that primary disturbances in these glands affect the activity of the vegetative nervous system and even of the emotional activities, but medical science does not yet take sufficient cognizance of the tremendous importance of affective disturbances in causing disturbances in the glands of internal secretion.

It may be remarked that the same patient may at the same time have two forms of hypothyroidism, one from a primary and the other from a secondary disturbance, as one from colloid goitre and the other from the effects of pathetic affectivity.

Of all these affective glandular ailments, probably those numerous cases of neurocirculatory asthenia (3) (soldiers' irritable heart, effort syndrome), particularly the group which follows the ravages of pathetic affectivity, are the most puzzling. As the preceding pathetic affectivity, causing the hypofunction of the thyroid, subsided, there welled up in these cases a manifestation of the opposite variety of affectivity, violent affectivity, and there naturally appeared in consequence an increase in the function of the thyroid gland (and of the adrenals). A somewhat different view of these phenomena may be expressed by saying that as the pathetic affectivity wore off its depressing effects on the thyroid gland (and adrenals) diminished and in consequence of this diminution of depression the thyroid (and adrenals) increased in activity. Which of these two statements may be the more correct, that is, whether the increase of function of the thyroid (and adrenals) results primarily and chiefly from the stimulation of violent affectivity which naturally wells up on the diminution of pathetic affectivity or whether it results primarily and chiefly directly on account of the diminution of pathetic affectivity I cannot say but I think both processes take place, probably in different degrees in different cases.

However, that the former is usually the more active would seem to be indicated as a case of hypothyroidism arising from combined colloid goitre and pathetic affectivity may present the most severe symptoms of neurocirculatory asthenia. It would seem that a thyroid gland that is acting weakly on account of the goitre would not become so very active on the cessation of pathetic affectivity unless a current of violent affectivity stimulated it. On account of the persistence of some of the effects of the preceding pathetic affectivity and its accompanying hypothyroidism and on account of the present violent affectivity and its stimulating effect on the thyroid, there exists in neurocirculatory asthenia the seemingly paradoxical condition in which there are some outstanding symptoms of hyperthyroidism coexisting with more obscure symptoms of hypothyroidism. A familiarity with these numerous cases will be of remarkable assistance in recognizing them. The symptoms are of great importance for this purpose. The temperature is apt to be subnormal. Whether the skin in the places already mentioned is rough and the tongue coated depends on the severity of the preceding siege of pathetic affectivity and on the degree to which the thyroid was depressed by it. The heart action is fast, the arteries excessively contracted, and the pulse pressure low. The history of these cases, which, by the way, is often difficult to elicit unless one is familiar with the ailment, is also of value in directing one to a correct diagnosis. Many people suffer more or less with neurocirculatory asthenia also after severe sicknesses and after long etherizations. As their weakness wears off two activities, affective and glandular, tend to appear: violent affectivity bounds up and thyroid (and adrenal) activity increases. In neurocirculatory asthenia, then, there is hypothyroidism in the sense that the thyroid is less active than it would be if the patient were in perfect health but there is hyperthyroidism in the sense that the thyroid often produces more secretion than the patient in his weakened condition needs. So, it may be well said that hypothyroidism should not be regarded as an absolute term measured by the activity of glands in health. An apparent hypothyroidism may be for the individual patient an actual hyperthyroidism and this fact is a strong example of the fact that medical practice after all deals with individuals in the last analysis.

As might be expected from the preceding facts, patients having neurocirculatory asthenia are often hypersensitive to the administration of thyroid extract, iodine, epinephrin, and cocaine. The alarming condition which appears from time to time after the use of cocaine and adrenalin in operations undoubtedly appears in these hypersensitive cases of neurocirculatory asthenia, chiefly on account of the resulting contraction of the arteries. Of course, the ailment when possible should be recognized and these drugs not used. In such cases, not only these drugs but also the ever present violent affectivity produce these alarming conditions. Indeed, the emotional disturbance aroused by mere conversation about the patient's disease or a contemplated method of treatment, especially an operation, sometimes brings on astonishing symptoms, as vomiting and fainting. These and particularly slighter disturbances from the same cause, e.g., lightheadedness or headache and nausea, are often credited to bilious attacks and intestinal autointoxication!

If the thousands of doctors of medicine who are still making diagnoses of intestinal autointoxication and bilious attacks will only obtain a thorough practical knowledge of affective diseases and digestive, and, indeed, abdominal diseases there will be an immense increase in the good done by the practice of medicine and multitudes of ailing people will no longer patronize all sorts of quackery. Then most of those who now say that there is nothing to my ideas on affective diseases will use these ideas in most of their cases! It rests with present practitioners of medicine whether they will make themselves able to give to their patients the benefits of a knowledge of affective diseases or whether the people must wait until the medical colleges have taught these things to the rising generations of doctors. It must be evident that the sooner medical men understand affective diseases and people get the benefit of this knowledge the better it will be for all concerned. May it not be said that this knowledge introduces a new era in the practice of medicine?

I hope that the devotees of intestinal autointoxication will read at once not only my articles listed below, particularly the first six, but also the pertinent articles by W. C. Alvarez (11), and A. N. Donaldson (12).

Since 1913 many causes have been assigned to asthma, particularly nasal obstruction, protein sensitization, and focal infections. That many varied methods of treatment bring relief to many of these patients seems to me to be due not to specificity in the treatments but to the effects of the treatments in allaying the pathetic affectivity either by removing the annoying cause or by suggestion. Anything which arouses pathetic affectivity can cause asthma in people whose neurobronchial apparatus is susceptible. Possibly there are other causes. However, although I have not had many cases of asthma, in all that I have had affective disturbance has been the cause. It sometimes takes much questioning to find the disturbing experience. I now have an asthmatic from a neighboring city who had had the disease six years. He developed it after much worry over the fact that a man his junior had been put ahead of him. He is now free from asthma.

It was with considerable hesitation that I included hay fever among affective diseases. If pollen sensitization had been known in 1913 I question whether I would have included it. However, it still looks as if some disturbing pathetic affectivity is at the bottom of the disease. In 1922 I had a patient who had had very severe attacks of hay fever for several years but who had never had the disease until strong pathetic affectivity weakened her almost to nervous prostration. So far as protein sensitization is concerned both in asthma and in hay fever it may be that such sensitization is made possible through the effects of pathetic affectivity acting on the vegetative nervous system. Its symptoms would indicate that. I think someone has already suggested that protein sensitization may be caused by some change in the nervous system.

As the indications for medicinal treatment of simple, colloid goitres are very distinct I wish to express objection to faddish methods of medicinal treatment and no medicinal treatment and to operative treatment in these cases. Removal of part of such an enlarged hypofunctioning gland deprives the patient of valuable tissue which can never be restored in function or in substance.

I wish to take this opportunity to elucidate a slight matter in my article on high blood pressure, arterial hypertension, and arteriosclerosis (5). In it I refuted the claim made by some medical authors that the germs and toxins from focal infections *directly* cause arteriosclerosis, but I did hold that these toxins act on the vegetative nervous system which in turn causes an abnormal activity in the muscular layers of the arterial walls thereby giving rise to pathological conditions in the arterial walls. When I denied that germ toxins from localized infections cause arteriosclerosis I merely denied the *actual claim* made by the authors that these toxins *directly* act on the arterial walls and cause arteriosclerosis but if my article is carefully read it will be very evident that I hold that toxins first affect the activity of the vegetative nervous system and that they thus do act *indirectly* as one cause of arteriosclerosis.

I wish to make a plea to medical people that they make a thorough study of affective diseases. I know of many doctors who deny the existence of these diseases, which constitute fully half of the cases that the general practitioner treats! Supposedly learned physicians, some of whom are even themselves filled with pathological affectivity, repeatedly refuse to accept my ideas, their disapproval being expressed sometimes with thoughtless ease, sometimes with supercilious disdain, and sometimes with violent rage! A most strange situation! I have prepared and freely presented for the advancement of medical science, the advantage of doctors of medicine, and the welfare of sick humanity, facts of the very greatest scientific value and the profession has in large measure rewarded me with disdain and insult. Most of these affective diseases are wrongly diagnosed and treated as intestinal autointoxication, bilious atacks, and uric acid diathesis. It is passing strange that these utter humbugs could so long find lodgment with medical practitioners. I prescribe for them a much greater knowledge of digestive, in fact, of abdominal, diseases and of affective diseases. Beginning over twenty years ago, I have diagnosed and treated hundreds of cases of digestive ailments and I have never once made a diagnosis of that product of the imagination called intestinal autointoxication but I have hundreds of times made a diagnosis of affective diseases. Indeed, it was in the clinics for digestive ailments where, about twenty years ago, I worked out in an absolutely original way my ideas on affective diseases. The first observation that I made was that, as I held my finger on the patient's radial artery, the artery occasionally contracted and dilated according to the effect of the conversation on her emotions. I soon observed that the arteries of patients were continuously and habitually excessively contracted or relaxed according to the prevailing emotional condition. I further observed that the state of contractility of the heart and bowels was also thus affected, etc. Strong emotions, especially if continued, leave a deep impression and effect on the nervous system, and both of their own persistence in modified form and by the persistent action of the deeply sensitized vegetative nervous system, cause for a long time disturbed function in the body's organs.

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Paresis of Duodenum, Stagnation and Consequent Toxicity of Duodenal Contents a Frequent Cause of Death in Surgical Operations on the Upper Right Abdominal Quadrant*

Preliminary Report

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Some patients who have undergone operations on organs of the right upper abdominal quadrant, especially on the stomach, fare well for three or four days, then the pulse becomes irregular, more frequent and small, the temperature becomes subnormal, and the skin clammy and covered with cold perspiration. Notwithstanding any and all therapeutic measures the patient passes away on the fifth or sixth day. We take into consideration only the cases where leakage did not occur, where neither peritonitis, intestinal obstruction, nor ileus were present. In short, that class of patients who make the surgeon feel that the operation was very successful, but for some unknown reason the patient died. We shall not discuss here any of the numerous theories and reasons offered as an explanation of death occurring under the circumstances mentioned above. In this preliminary note we shall only state that death is due to absorption of toxic material, which collects and stagnates in the duodenum. This toxic material collects in the duodenum because the duodenum itself becomes paretic and does not discharge its contents in the lower bowels. Death is due to the same mechanism and occurs under the same circumstances as it does in partial or complete obstruction of the duodenum, although the duodenum is patent.

Without even taking into consideration, at present, the factors which aggravate obstruction of the duodenum, such as trauma, infection, and impaired blood supply, we shall accept as proved the notion, supported by clinical and experimental data, that obstruction of the duodenum is an extremely serious condition. The question which must be answered is, therefore: Do we have obstruction of the duodenum or a condition similar to it after operation on the stomach and other organs of the right upper quadrant? Our answer, supported by clinical and experimental irrefutable proofs, is: We have a condition similar to duodenal obstruction, that is collection, stagnation and absorption of toxic duodenal contents.

CLINICAL CASES

In the last six months I have lost two patients, both having undergone gastrectomies for carcinoma of the pars pylorica. Both patients presented symptoms strikingly similar and commonly observed in this class of patients. Briefly, both patients were relieved of the usual stomach distention, during the second and third days following operation, by gastric lavage. No fluid was allowed by mouth and 1,500 and 2,000 c. c. was given daily either by rectum or by hypodermoclysis.

Pulse rate was 98 to a maximum of 120, regular and of good quality: temperature 100°, the afternoon of the day of operation, kept constantly around 99—to be exact, 99.4, 99.2, 99; respirations around 20. Abdomen was soft, not distended, on the contrary scaphoid. The patients were comfortable, only begging for a drink. On the fourth day, fluids (water, milk and coffee) were allowed by mouth, greatly enjoyed and retained: the patients, however, were rather restless. The pulse began to become irregular, intermittent, going as low as 70: temperature 99°, 98°, 97°, 99°; respirations 25. During the night the restlessness increased. On the fifth day, the patients were more restless, begging to be put to sleep. Warm coffee, with milk and water, were given at will; temperature 98°, 97°, 97°, with cold clammy perspiration; pulse irregular, intermittent, small, respirations fatigued and irregular.

The condition became progressively worse until one patient passed away in the evening and the other during the early morning. In both patients the usual therapeutics were applied. Following the advice of the attending physician, Dr. J. Steele, caffeine was used as heart stimulant, morphine one sixth grain was administered twice to one patient and three times to the other. To one patient 600 c. c. of whole blood were transfused on the noon of the fifth day. One patient had a bowel movement on the fourth day, and another just before death; the other patient had a movement only just before death.

The outstanding features of these cases were: abdomens were soft, tractable, not distended, but, on the contrary, scaphoid to the very end; from the third day to the end the patients wasted very rapidly, one could notice them getting thinner every hour. Notwithstanding the fact that they were drinking freely, that all therapeutic means were promptly applied, the patients passed away with subnormal temperatures, as if completely exhausted.

The symptoms preceding death could evidently not be attributed either to leakage, peritonitis, ileus or intestinal obstruction. To me they seemed similar to the ones observed in obstruction of the duodenum. To prove whether this view was correct or not experimental work was immediately undertaken.

EXPERIMENTAL WORK

Six dogs were operated upon by performing gastrectomies, according to different standard methods. Three days after, that is, at the period corresponding to the period in which patients presented the symptoms described above, the animals were etherized and while still alive the abdominal cavity was examined. Healing was proceeding normally, there was no blood, pus or any other fluid; the stomach was more or less distended; in all the animals the duodenum was found more or less distended, paretic, full of a chocolate colored fluid, although, according to the

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type of operation performed, there was no physical obstacle to the passage of this fluid either into the stomach and thence into the jejunum or directly into the jejunum. The first portion of the jejunum was also somewhat congested and distended. While we shall study thoroughly the contents of the stomach, duodenum and jejunum at various intervals, after the operation, at the present it is sufficient to emphasize the fact that the duodenum was more or less distended, paretic and contained a great amount of chocolate colored fluid. This finding means that in all the animals a condition existed similar to that found when obstruction of the duodenum is present. Indeed the first phenomenon following obstruction of the duodenum is a collection of fluid in the duodenum itself, because obviously this fluid cannot be evacuated. The fluid which collects in the duodenum is composed of bile, pancreatic juice and secretions from the mucosa, and its glands. This fluid is not toxic *per se,* it becomes toxic because it stagnates in the duodenum through a process which is not fully understood yet. One incontrovertible fact is, however, that the duodenal contents become strongly toxic because it stagnates in the duodenum itself. Between duodenal obstruction and the condition which follows gastrectomy and other operations on the upper right abdominal quadrant, the only difference is the mechanism which causes stagnation of the duodenal contents. In obstruction it is the physical obstacle created by the obstructing agent; in the cases under consideration, it is paresis of the duodenum. It is easily understood how paresis of the duodenum will occur when the duodenum is severed from the stomach or is otherwise severely traumatized, or the stomach itself becomes paretic, as evidenced by the enormous amount of fluid, which may collect in it, even after a simple gastroenterostomy. As there is no doubt that in our experimental animals the secretions normally passing through the duodenum, instead of passing through it, stagnated there, we feel justified in asserting that in the cases under consideration death was due to collection, stagnation and consequent absorption of toxic duodenal contents. The contents become toxic and are absorbed following the same process which causes their toxicity and absorption in duodenal obstruction. In passing, we may remark that collection and stagnation of duodenal contents are favored by gravity, on account of the peculiar shape and location of the duodenum itself and the position held by the patient lying on his back in bed.

Exceptionally, experimental animals and fortunately few patients die from absorption of toxic stagnant duodenal contents. The importance of this factor in causing death, however, is positive and while we shall not discuss in this preliminary report the mechanism that causes paresis of the duodenum and how duodenal peristalsis is again resumed, we think we have made the point clear that death is due to paresis of the duodenum, causing collection, stagnation, toxicity and consequent absorption of duodenal contents. When we take into consideration the fact that patients undergoing severe operations on organs of the right upper quadrant are usually in a poor general condition, it is not surprising that absorption of the toxic duodenal contents turns the tables against them.

We are at present engaged in a thorough study of this subject in order to devise therapeutic means which will help in these cases. The work already accomplished gives great promise that means adequate to meet the needs of this class of patients will shortly be available and confirm the view expressed above that death is due, in the cases under consideration, to paresis of the duodenum causing collection, stagnation, consequent toxicity and absorption of the duodenal contents.

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Late Metastasis of Melanosarcoma of the Liver*

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There is an existing impression that melanosarcoma metastasizes quickly. This idea is erroneous and will mislead in making a correct diagnosis. The case reported is an interesting one from the viewpoint of late metastasis.

Case.—N. A., forty-one years of age, operator on ladies' waists, presented himself on June 5, 1922, giving the following history: He was married seventeen years ago, had one child living and two had died in infancy; wife was pregnant. He smoked a good deal, rarely drank alcohol, but drank from two to four cups of coffee daily. Family history was negative. His health had generally been good. He had had none of the diseases of childhood, and there was no history of pneumonia, typhoid fever or rheumatism. He rarely complained of headache. His right eye had been removed on March 10, 1916; the left gave no trouble. He complained of a good deal of cough, and was often conscious of his heart beating. Bowels were regular, appetite good, and he denied venereal disease in name and symptoms. Two weeks

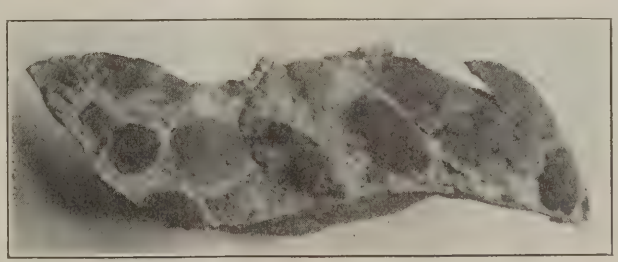

Fig. 1.—Cross section of the liver showing circumscribed area of melanin containing pigment.

*Read before the Clinical Society of the New York Post-Graduate Medical School and Hospital, January 19, 1923.

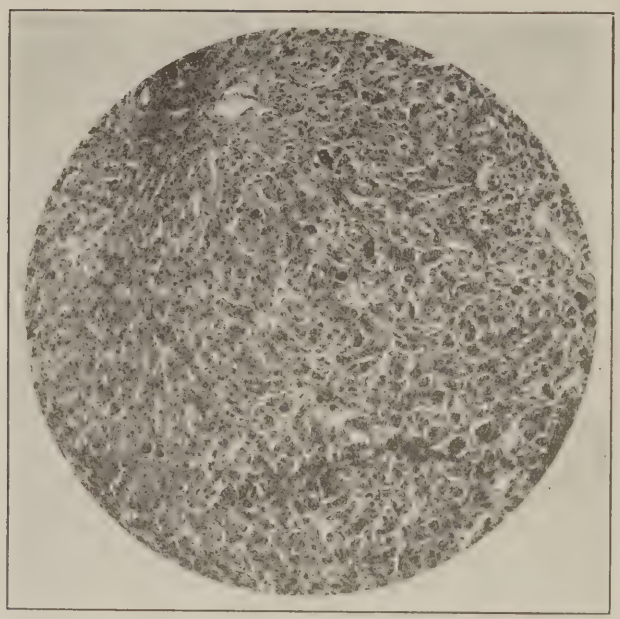

Fig. 2.—High power of the liver showing liver cells encroached upon by melanin pigment granules.

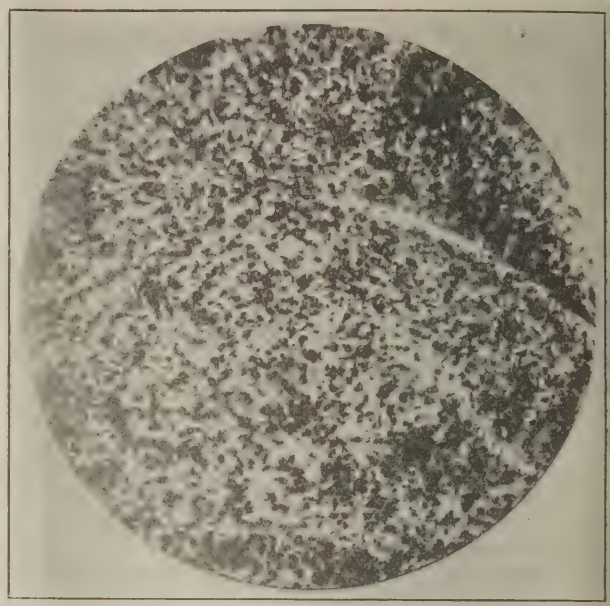

Fig. 5.—Low power of section of the tumor of the eye showing melanin pigment granules.

before presenting himself for examination he was seized with a cramplike pain in the epigastrium and right hypochondrium radiating to the kidney area and right shoulder.

Physical examination.—This showed a fairly well developed male, scalp, ear and nose negative, right eye missing, left eye reacting to light and accommodation. Sclera had icteric tinge, many teeth were missing, and the remainder were carious. There were no visible pulsations in the neck, no enlarged glands or masses of any kind. Heart sounds were regular, slight systolic murmur heard, right border not displaced. Liver, anteriorly, dullness extended from the fourth intercostal space in the right nipple line to the sixth intercostal space in the midaxilla, just above the breath sounds were diminished and medium moist râles were heard. Posteriorly on the right side of the chest there was dullness to flatness from the angle of the scapula down and diminished breath sounds as well as vocal resonance. In the abdomen the liver extended eight centimetres below the costal margin in the right nipple line, to a point four centimetres below the costal margin in the left nipple line, edges meeting the costal margin in the left midaxilla. Spleen was not palpable.

Laboratory findings.—Blood count revealed 6,000 leucocytes; differential count of fifty-six per cent. polymorphonuclear neutrophiles, twenty-six per cent. large lymphocytes, seventeen per cent. small lymphocytes, and one per cent. eosinophiles. Hemoglobin was eighty-five per cent. Chemical blood showed 463 NaCl, .122 sugar. Temperature fluctuated between 98.1° and 101.8°. No parasites, occult blood or mucous in the feces. Specific gravity of urine was 1.019, faint trace of albumin, sugar negative, casts negative. Blood Wassermann was negative.

X ray findings showed a small gastric residue in the pylorus at the end of six hours. Displacement of the bulbus of the left, by what appeared to be increased size of the liver. There was colonic hypomobility, and the right dome of the diaphragm appears roughened and high.

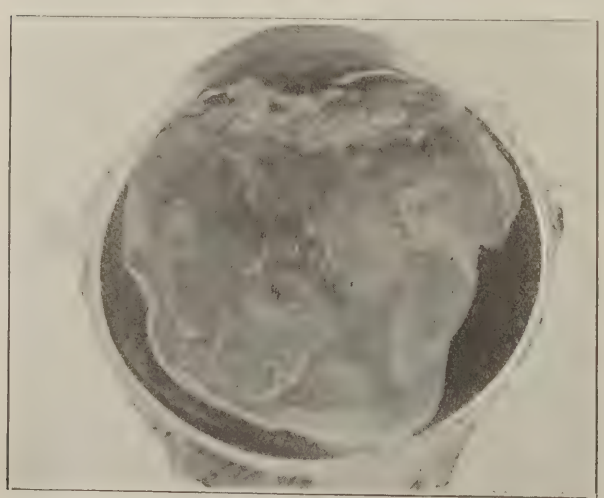

Fig. 3.—Cross section of the eye with membrane covering tumor.

Fig. 4.—Cross section of the eye showing membrane removed exposing tumor.

Course of the disease.—To sum up the things of interest, we must note the enlarged liver, the fever, negative blood count, chemical blood as well as blood Wassermann; the x ray corroborating the physical findings as regards the enlarged liver; the abdomen, especially in the upper part, was becoming fuller, the distention being rather conspicuous. The patient was growing dyspneic due to encroachment upon the chest. Laparotomy was indicated and was performed on June 29, 1922, by Dr. Charles Gordon Heyd, who was kind enough to submit the following report:

At operation the liver was found to be about three times the normal size, uniformly enlarged, with enlargement having taken place in the right and left lobes. The surface of the liver appeared like a mass of blueberries, with patches of normal liver between them. The liver was the seat of diffusely implanted neoplasms, each one discrete, being about the size of blueberries and having a peculiar blue black melanotic appearance. The abdomen contained about 800 c. c. of free fluid. Remainder of abdomen was negative. The operation consisted of laparotomy with removal of a portion of the liver for microscopic examination.

Microscopic examination.—Dr. Louise H. Meeker examined the specimen and reported as follows:

The dark areas described in the gross are fairly well circumscribed. They consist of densely packed polymorphous cells, varying greatly in size. Some of the cells are rounded and some are spindleshaped and all contain more or less dark brown pigment granules. The granules are apparently melanin. A few cells are of giant size with several nuclei. The borders of the melanin containing areas show the new growth cells extending into practically unaffected areas of liver cells. A few cells are found diffusely throughout the liver cords. The melanin containing cells seem collected chiefly about the central veins, from which they extend outward and compress the adjacent tissue. The cells suggest similar tumors found in the choroid coat of the eye. There is some increase of fibrous tissue, congestion and round cell infiltration in the liver tissue bordering the circumscribed nodules.

Diagnosis.—Melanosarcoma.

Hospital report.—The following report was received from the Herman Knapp Memorial Eye Hospital: History of patient N. A., as taken March 9, 1916: Eight weeks ago patient noticed poor vision and could not distinguish colors. There was no pain. He went to the Thirteenth Street Dispensary and was given eye drops. Later enucleation was advised. Vision was failing rapidly. Examination showed:

$$\text{Vision: } R\frac{20}{70}\ L\frac{20}{-}$$

R Pupil slightly dilated, did not react, tension normal, media clear, disc showed fairly large detachment, rather circular in shape, margins quite sharply marked off. Situated above and temporally to disc. Transillumination showed dark over detached area. *L* Normal.

Diagnosis.—Sarcoma of choroid, right eye. Enucleation was performed and the patient discharged on March 13, 1916.

Differential diagnosis.—The most important thing we have to contend with is an apparently enlarged liver, encroaching upon the right chest above and extending below into the upper part of the abdomen well below the costal margin on the right as well as the left side.

It appears to me that from a careful analysis of the various causes of enlarged liver we can gain more information than from all the laboratory data available. I therefore decided to review the various causes for enlarged and palpable liver, and to divide them into: 1, chemical; 2, mechanical; 3, bacterial; 4, parasitic; 5, secondary to the various systems; 6, due to anatomical position; 7, anomaly of the liver itself; 8, new growth.

I will admit that the classification given above is on no firm footing, for instance, Hanot's cirrhosis I placed under hemopoietic disease, whereas the true cause of it is actually unknown.

Bacterial causes are placed under causes due to anatomical position. This is simply an attempt to arrive at a schematic classification of the great number of causes of palpable and enlarged liver so that they may be at the clinician's command.

LITERATURE

It will be remembered from the history of the case that the eye was removed more than six years ago. The association of the removal of the eye and the now enlarged liver is surely sufficient to make one suspect melanosarcoma of the liver. This, however, was altogether overlooked, to the extent of leaving out the urinary melanin test, on account of the erroneous impression that melanosarcoma metastasized rapidly. Turning to the literature for reported cases, one is certainly impressed with the fallacy of that supposition.

It is true, Humphrey David Rolleston (1), who was a close observer of affections of the liver, is authority for the statement that recurrence of the liver usually occurs within three years of the appearance of the primary growths.

However, Charles H. Lilley (2) reports a case where the eye was removed ten years before the patient complained of gastric distress, the cause of which turned out to be melanosarcoma of the liver.

Jonathan Hutchinson, Jr., cites a case where first evidence of metastasis appeared eleven years after the diseased globe of the eye had been removed.

Larobaugh (3) reports a case of melanosarcoma of the liver seventeen years after the removal of the eye for melanosarcoma.

William H. Wilder (4) reports a case where metastasis in the liver occurred thirty-two years after the removal of the eye for melanosarcoma.

COMMENT

The lesson learned from this case and the literature of other cases: There is practically no limit to the length of time metastasis is liable to occur after the first appearance of the melanosarcoma of the eye.

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1. Rollaston: *Lancet*, London, 1899, i, 1273.
2. Lilley: *Lancet*, London, 1911, ii, 363.
3. Larobaugh: *Jour. A. M. A.*, 1900, xxxv, 1363.
4. Wilder: *Ibid.*

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Practical Therapeutics

VACCINE TREATMENT IN PRURITUS ANI, VULVÆ AND SCROTI*

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New York

To the general practitioner, or for that matter to the entire medical profession, the most interesting topic in a discussion of this disease is its successful treatment and cure. And a most natural interest it is, for if there be one disease that fills the physician with as much despair as it fills the patient with desperation, it is certainly pruritus ani, vulvæ or scroti.

The legion of remedies and cures flaunted in medical literature is proof that not one of them is of general value and that although it may relieve a case here and there it is not a cure in the true sense of the word. When we see patients who suffer as long as ten or twenty years, sampling, as they suffer, the thousand and one socalled cures known to the general medical profession, we cannot reasonably come to any other conclusion than that they are quite ineffective from the viewpoint of true curative ability.

The patient is in an ugly state of mind—his request is so simple and modest: "Stop this awful itching, doctor," and yet with the best professional acumen the physician can do nothing, but in truly empirical style try something else. It is, indeed, in the treatment of this disease that the high point of empiricism is reached, not only by charlatans but unfortunately by some of the most highly reputed medical men. Textbooks on rectal diseases, gynecological and genitourinary diseases in speaking of the treatment of this disease, say, "treat the cause" —and then give a list of nearly a hundred causes. Why would not the general practitioner despair?

Certain it is that there are cures without number. I myself have gleaned from literature and tried out over four hundred formulæ which are mentioned as cures of this disease in many otherwise accurate textbooks on rectal disease. But the general practitioner reading these lines will agree with me when I say, mildly, that they do not cure. There are some, which exert a palliative influence or perhaps remove some dominant feature of irritation and so effect relief, but the majority of such cures are temporary and evade the issue of a real cure.

The inefficacy of the methods in vogue is to my mind a selfevident proposition. When I consider the aforementioned patients who have come to me after suffering ten or twenty years and in one case in my practice, forty years, and reflect upon the numerous physicians who have treated these people during this time, I can come to no other conclusion.

Perhaps the falsely apparent simplicity of this condition leads the busy doctor to treat it without the solemn consideration he would give almost any other disease and without a due consideration of the causative factors in its production. Of course, some blame belongs to the patient who loses courage after one or two visits to a doctor and drifts off before the doctor has an opportunity to study his particular case. For these cases are perhaps more than any other disease, problems unto themselves.

But to come now to the matter of direct importance; namely, treatment of these cases, I wish to draw the reader's attention to a classification which has proved invaluable to me in the successful treatment of these cases. This has been elaborately set forth in my previous articles and my monograph mentioned in the bibliography. I will therefore state the matter briefly:

There are two distinct types of localized pruritus: one in which the itching is a misreferred sensation with visceral pathology as a basis—this I term an indirect pruritus—the other in which the itching is a correctly referred sensation, with pathological causes in the pruritic zone. This I term a direct pruritus. From the viewpoint of curative treatment this distinction is important, as must be quite evident.

A common factor to both types, however, is the fact that the itching and its consequences are both localized to the same area. By consequences I mean not only the mechanical injuries suffered by the skin of this area as a consequence of attempts at relief but also the infection that occurs in a definite proportion of cases and which is likely to occur in any of them. My researches into the causative organism in such infection appear to have definitely fixed the guilt upon two organisms.

To state concisely my views as to the suitability of vaccine therapy in these cases, I wish to draw attention to the following chain of facts:

1. My pathological studies support the idea that in a certain percentage of cases bacterial invasion does occur.

2. The only organism which I have been able to demonstrate in situ in the tissues is the staphylococcus.

3. The organisms which I have been able to culture directly from tissue excised from the pruritic area have been the Baccilus coli from the deeper layers of the tissue, and the Bacillus coli and Staphylococcus albus from the superficial layers of the tissue.

4. The fact that I have not been able to demonstrate the Baccilus coli in situ in the deeper tissues does not negative its existence there but rests upon a difficulty in staining this gram negative organism among tissues which in themselves take a gram negative stain.

5. In all the cases I have seen where sections taken from them showed a dermatitis of presumable infective origin, and which gave positive cultures from the deeper layers of the skin, erosions, abrasions, or maceration of the skin in this area were clinically present.

6. In view of the coincidence of clinical evidence that the natural barrier to infection has been weakened and the histological and bacteriological evidence that infection occurs in these cases, it seems logical to

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conclude that in cases presenting such clinical evidence infection is either present or imminent.

7. In pursuance of this line of thought vaccine therapy seems indicated in that type of case which presents the lesions described.

8. The only vaccines that would appear appropriate in view of the aforementioned data are those of Baccilus coli and Staphylococcus albus.

In my experience with the treatment of pruritus of the perineum I have met with most excellent results in selected cases by the combined use of Bacillus coli and Staphylococcus vaccine. I have not, as yet, sufficiently formulated my data on treatment to give the definite percentage of cases in which I have successfully used it, but I will say at this time that the proportion of cases in which vaccine therapy is applicable as a curative measure is decidedly less than is commonly supposed, and by no means approximates one hundred per cent. It may, of course, be used as a prophylactic measure in every case.

I do not believe that vaccines, unaided by other measures, will cure an infective case, but they certainly do aid in the palliation of the pruritus pending the eradication of the infective focus and contribute much to the eventual cure by helping in the interruption of the vicious cycle of itching causing scratching and scratching increasing the itching. It is highly desirable that the physician should regard vaccines in general as an aid and not a substitute for procedures directed at the destruction of an infective focus. The latter should not be delayed because of attempted vaccine therapy.

If then we select our cases properly, i. e., those in which by the presence of excoriations or erosions we can safely assume the presence or imminence of infection, we may be certain of gratifying results. The following paragraphs describe the method I use and advocate in the treatment of cases which have been selected as suitable for vaccine therapy.

SELECTION OF VACCINE

Although there are some differences between the vaccines I use and the ordinary stock vaccine they concern the bacteriologist more than the clinician. I will therefore omit details of such procedure. Staphylococcus albus stock vaccine and Baccilus stock vaccine have yielded better results than any other vaccines, that I have tried. The idea of making an autogenous vaccine from smears taken from the surface of the pruritic zone is not consistent either with established bacteriological technic or with my findings as described in the chapter on bacteriology. If we are to obtain any result at all from the use of vaccine, I am convinced that a stock vaccine will serve the purpose. I start treatment with staphylococcus albus stock vaccine, and if response is not evident by the third injection commence Baccilus coli vaccine in addition.

DOSES AND CONTROL

A small dose at the start with a gradually ascending amount until a distinct reaction occurs, appears to be the best method of arranging the doses. When a distinct reaction, either focal or systemic, has been obtained it is well to note the amount necessary to produce this and consider it the normal maximum dose for the individual. This differs, of course, among individuals. From this normal maximum dose all administration of vaccine from that point on is based on this known figure controlling variations by noting the reactions produced.

FREQUENCY

The vaccine may be given from one to three days apart, but my own experience favors a two day interval. I continue treatment while taking other measures, such as ionic medication or topical application, to eradicate the infective focus. In some cases relief is rapid, and if properly selected all cases show a distinct palliation after the first two or three treatments. Vaccine therapy, depending as it does upon the evocation of immune response on the part of the body, demands a reasonable length of time in which to allow these processes to occur. Likewise, it should be continued for four to six weeks after the primary palliation.

TECHNIC

The preferable method of administering vaccine is by subcutaneous injection through a small gauge needle into the buttock, arm or adipose tissue of the abdomen. The other methods available are intramuscular or intravenous, but they possess many dangers, not involved in the above method and no advantages of therapeutic value. Protection against these organisms by the evocation of immune reactions, i. e., by the use of vaccines therefore is most logical not only in cases actually suffering from such bacterial invasion but also those who by their scratching will eventually weaken or remove the normal barrier to such infection, i. e., by abrading the skin.

Proceeding from the sound basis of accurate knowledge of the cause, the logical cure can be accomplished, for with a thorough understanding of the conditions existing, treatment becomes less of a problem and more of a definite task.

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Vincent's Angina and Its Treatment.—J. Puig (*Presse médicale*, May 3, 1924) points out that the combination of spirochetes and fusiform bacilli studied by Vincent may occur not only in Vincent's angina but in any other condition manifested in necrosis of tissues. The germs are inoculable only in tissues in which the resisting powers have been weakened by injury or other harmful factors. The distinct rôle played in this connection by lack of vitamines account for the pseudoepidemics of Vincent's angina occurring among agglomerations of human subjects living on a scanty or too uniform diet. In five per cent. of cases the diminished resisting power of the mucosa is due to a general disease or lack of vitamines, but in ninety-five per cent. it is due to disturbances relating to the six year teeth or the wisdom teeth, such as infection of the pericoronary mucosa or chronic alveolodental irritation. X ray examination is of service in the study of the teeth in this disorder. Arsphenamine frequently heals the ulcerations; but it does relieve the lessened tissue resistance, and recurrence may take place. The only logical treatment, therefore, is to remove the underlying cause of the lessened tissue resistance.

Historical Medicine

Samuel Thomson and a Prethomsonian

THE HONORABLE WILLIAM RENWICK RIDDELL,
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Toronto

Samuel Thomson, self styled Doctor, and styled (as he says) by the Regular Profession, Quack, Empiric, the Sweating Doctor, the Indian Doctor, the old Wizard, The Steaming Doctor, and other like delectable epithets, is well known as the founder of a School of Medicine on this Continent in the early years of the last century (1).

One of his cardinal principles was that Providence had given to this region of the world a supply and variety of plants which if rightly discriminated and used, would heal all its diseases (2). He seems to have been a truly religious man: for conscientious reasons and thorough conviction, he left his original church, the Baptist, and became a Universalist.

Of little education, he "took nature for my guide and experience as my instructor" with the result that he arrived at the conclusion that "There cannot be the least doubt, but there is medicine enough grown in our country to answer all the purposes necessary in curing every disease incident to the climate if the people had a knowledge of it; but the doctors have so much influence in society and manage their affairs with so much art for their own profit and praise that the common people are kept back from a knowledge of what is of the utmost importance for them to know" (3).

He tells us that a very few of the doctors were fairly reasonable—for example "the famous Dr. Kittredge of Walpole" who was admired "on account of his extraordinary skill in surgery and the great name he acquired and justly deserved . . ."; but then "His system of practice was peculiarly his own, and all the medicines he used, were prepared by himself from the roots and herbs of our own country" (4). Then there was Dr. Barton of Philadelphia who agreed to try some of Thomson's medicine, but unfortunately died before he could report results—he "acknowledged that there was no art or science so uncultivated as that of medicine" (5). Then, too, there were Dr. Shephard, who befriended him when charged with murdering young Ezra Lovett, and Dr. Fuller, of Milford, N. H., who "made many statements in my favour as to the value of the medicine," (6) and one or two others.

But most of them were *mauvais sujets,* and did not hesitate to charge the innovator with murdering his patients, and to make the like unkind statements about him. They got what was coming to them. Dr. French who instigated the prosecution for murder and probably incited the witnesses to tell of medicines that Thomson called *coffee, bulldog, ramcats, screw auger, belly-my-gristle, etc.*—Dr. French got his deserts; "within a year he was brought to the same bar . . . and convicted of robbing a graveyard of a dead body which it is reported he sold for sixty dollars—he lost all his credit and was obliged to quit his country" (7).

So, too, of "the five doctors at Eastport, when I went there, who had plenty of business . . . in a short time three . . . had to leave the place for want of employment" (8).

And others, beside the archenemy, Dr. French, who took part against him, came to grief. "Deacon Pecker, one of the Grand Jury that found a Bill against me, . . . shortly after I was put in prison . . . had a stroke of palsy and has remained ever since one half of his body and limbs useless" (9). Indeed, "Most of those that have been instrumental in trying to destroy me and my practice had some judgment befall them as a reward for their unjust persecutions and malicious conduct towards me." The Postmaster at Eastport, Thomson strongly suspected of stealing two fifty dollar bills from him; he fell from a precipice and was killed—naturally, that "put a stop to pursuing the subject any further" (10).

The Judge himself did not escape—in the trial for murder, indeed, he charged in favour of Thomson and escaped divine punishment; but when Thomson brought an action for slander against Dr. French for calling him a murderer, the Chief Justice, the celebrated Theophilus Parsons, was again on the bench—this time "he seemed . . . to be determined to have the case go against" Thomson and told the jury that Dr. French was completely justified in calling him a murderer. He even abused Thomson's lawyers for taking up with him, "Saying they ought to be paid in screw auger and bull dogs." And Nemesis swiftly followed—"for he soon after had a stroke and as I am informed died before the next Court met" (11). Truly he "got his."

Thomson's great discovery was Lobelia, which he called the Emetic Herb and which was the most important article in his practice—his No. 1. This he discovered when he was four years old, but it never occurred to him that it was of any value as a medicine till eighteen years afterwards when, mowing in his field with a number of men, he cut a sprig of it and gave it to a man next to him who ate it. He vomited two quarts, and never had anything do him so much good in his life. Thereafter Thomson continued to experiment with the plant for years: and finally he took out a United States patent giving him the exclusive right of using this plant for medical purposes; and he sold the right to use it for $20.

When the doctors failed in their attempts "to destroy the credit of it by . . . representing it to be a deadly poison, etc.," they changed their tactics and tried to defraud him of the discovery.

There can be no doubt of Thomson's *bonâ fide* belief in his original discovery of the medicinal properties of Lobelia. Speaking of the statement in Thacher's *Dispensatory* (13) that "it was employed by the aborigines," Thomson says: "It would be

folly for me to undertake to say but that it may have been used by the natives of this country: but one thing I am certain of that I never had any knowledge of their using it nor ever received any information concerning it from them or anyone else." Nor can any suspicion rest on his good faith.

He also says: "There is no mention of this herb by any author that I have been able to find previous to my discovering it excepting Linnaeus who had given a correct description of it under the name Lobelia inflata; but there is nothing said of its medical properties, it is, therefore, reasonable to conclude that they were not known till I discovered it" (14).

But he did not and could not know that before he was born—he was born in 1769—the celebrated Swedish botanist and traveler, Peter Kalm, a favorite pupil of Linnaeus, had found it used by the Indians of Canada as a medicine. Kalm says: "The savages of Canada have no knowledge of mercury but nevertheless they very easily cure all venereal maladies. When I came amongst them I found that it was almost impossible to learn their secret—they imagined that if their remedy once came to the knowledge of Europeans it would instantly lose its virtue. Colonel William Johnson who was very influential with them . . . at my instance . . . at length succeeded. . . .

That marvelous plant is Lobelia which grows in abundance in the wet plains and swamps.

The treatment of the Indians is of the simplest character: They boil four or six or more of the roots according to the gravity of the disease: and the patient drinks as much as he can of the decoction, following a rigid regimen, abstaining from all fermented drink and living on vegetables alone. The same infusion is employed to wash the ulcers. The treatment usually lasts fifteen days, at the end of which time the disease disappears.

With Lobelia and some other plants of the same nature, there are made in Canada astonishing cures which cannot be effected with mercury—and the difference between the two treatments is that with Lobelia the savages never run a risk of life.

There is no instance of an American, however severe his disease, meeting his death during treatment with Lobelia—there is no patient treated by this method who has not been cured" (15).

It must not be supposed that Thomson employed Lobelia for venereal disease alone—he used it for everything from ague to dropsy, from headache to piles.

In venereal diseases, he did not discriminate syphilis and gonorrhea—he preferably used his No. 3 of bayberry root bark, white pond-lily root and the inner bark of hemlock pounded and steeped in boiling water: but in early stages he used his Rheumatic Drops made of gum myrrh and brandy.

Now was he true to his principle of employing only native plants—he imported and used Cayenne pepper in large quantities and spoke most disparagingly of the native article.

Of course Thomson does not stand alone in claiming universality of healing power for one plant—the panacea is all too common in the history of medicine, regular and irregular.

The noted Joe Pye on this Continent, pinned his faith on Eupatorium purpureum, still called Joe-Pye weed: Formius of Montpellier relied upon his Syrop de capillaire made of the Adiantum capillus Veneris, our Maidenhair fern, which thence received the name Capillaire de Montpellier.

Of less notoriety, but of much greater merit and infinitely more learning than Formius or Joe Pye was Johannes Andreas Harnisch, a medical practitioner who in 1758 published at Leipsic his "Meditationes Botanico-Medicae de Planta quadam Marchiæ propria Pimpinella Nigra . . ." 4to, pp. 40 (16).

In this work, now rare but not wholly forgotten, the learned author sounds the praises of the common weed, the black or great Pimpinella.

This is a work showing much research and erudition: it is in good Latin almost wholly free from the solecisms which disfigure so much professional Latin of that and the preceding eras.

I call Harnisch, a "Pre-Thomsonian," because of the views expressed in his Praefatio.

I translate as literally as the idioms of the two languages permit, the portions of this Preface which I mean.

"Omnipotent God in his great and hidden wisdom and beneficence has not planted all and the same herbs and plants in one and the same place, but has collocated one in this, another in that—and these again are different in their shape, color, odor, taste and effect. For one is preferable to another in that it has different flowers or possesses different leaves or puts forth different fruit and seeds or glories in different root—that indeed we see if we walk the meadows, the fields, the woods and the gardens. But the most benign Creator did this for no other reason than all these should serve man. . . . I shall not touch exotic plants and those which grow in the four quarters of the world, since in this place and in that, an herb is to be found useful and preeminently suited for this or that necessity. For an example, I take Guaiacum wood, and China root (17) which two species are found in India and Sicily where the Neapolitan disease (18), now called venereal, is prevalent. Are these not the best remedies for purifying the blood in this affection and other impurities of the blood? Quinquina and Schaccarilla, two trees grown in the region of Peru where various fevers, especially the intermittent, are one might say endemic. In this kind of disease are these not splendid antifebrile medicines? And Cochlearia is found in abundance and almost wild in Belgium where scorbutus very frequently tortures and affects men. Is that not the solace of the scorbutic . . .?

Among the peculiar plants is contained Pimpinella nigra, which I deal with in the present treatise —I call it "peculiar" because it is not found everywhere, but only in particular places and it is peculiarly effective in certain particular diseases. . . . And to the thrice good and thrice great God be there for this best of plants, praise and honor and glory everlasting."

The author begins his treatise in the time honored way followed by "the best and most celebrated writers on botanical matters" by going into the name and its origin. He considers the name derived from the Latin "bis" (twice) and "pendeo" (I hang) or "Penna" (a feather), the name being due to the leaves because two leaves hang on the right side or the leaves on either side are like feathers. In this

he agrees with Hecker and Matthiolus, he disagrees with Amatus Lusitanius (19) who thought that the plant was so called because it had the odor of the citrulus (Citrullus vulgaris, or common watermelon) which the Spaniards call "pipinum" (20); for, as Harnisch says, "it has neither the odor nor the taste of the citrulus."

"Others call the plant Pampinula or Pampinella deriving the name from the noun Pampinus (21) meaning a tender and leafy little stem in a vine (*coliculus,* i. e., *cauliculus*) because the tender little stems of the Pimpinella are like the pampini of the vine.

"Others again call it Pipernella (22), which name they derive from its pungent root which has a sharp taste like pepper—and for this reason it is ineptly called German pepper, since it answers to pepper both in taste and in qualities. . . . Others call it Bibenella deriving the name from 'bibere,' to drink, because its acrid roots bring on desire for drink and drinkers if they chew this root can drink the more. In German it is called Bibenelle, Pimpenelle, Pepperwort"; but Harnisch thinks the Latin Pimpinella is far the best name.

By recent botanists including Tournefort (23), it was called Tragoselinum. Matthiolus calls it Tragoselinum or Apium hircinum (Goat parsley) either because goats are fond of it as a food or because its leaves in autumn have a hircine smell. Some call it Petroselinum hercinum, Apium petraeum, Petrapium, Saxifraga hircina, Petrasindula, Tragium alterum, in German Steineppich, Bockspeterlein, etc.

After a very complete botanical description, the author tells us that its native habitat was in the meadows within two or three miles of Frankfort.

Even before this treatise, the author, as he says, had drawn the attention of the profession to two notable cases which he had fully cured by Pimpinella, one of dropsy and one of *erysipelas suppurata et exulcerata:* and in the present work he speaks of its merits at large. And certainly they are not few.

"So far as the virtues and effect of this plant are concerned, it, by reason of its oleososulphurous and salinealkaline particles, has not only balsamic force and efficacy but also it checks putredinose corruption while it purifies the blood and separates out the impure particles from the humors and evacuates them through the ordinary *viae,* especially the urine and perspiration, by excretion and elimination.

"Moreover it soothes (*demulcet*) and as it were sweetens the blood by allaying ebullition and effervesence. So, too, this plant is to be considered as the best and safest diuretic, diaphoretic and alexipharmic (24). . . .

"Therefore we think it a splendid remedy internally in various affections as demulcent, resolvent and apophlegmatisans (25). . . ."

Three pages are taken up with an enumeration of its wondrous qualities. I select but a few of the diseases for which taken internally it is sovereign—Viscid mucus in the sinuses of the head or in the vessels of the lungs, coryza catarrhal and pectoral, cough, asthma, tooth ache, rheumatoid arthritis, ischialgia, podagria, achores infantum, scorbutus, scabies, the first stage of lues venerea, calculi, nephritis, uterine diseases, fluor alba, amenorrhea, dysmenorrhea, hysteria, colic, hemorrhoids, want of appetite, malignant and contagious diseases, putrid fevers, exanthemata, smallpox, measles, purpura, fluxus lochiorum, gonorrhea, tremors of the limbs, etc. "In the lues venerea it is to be extolled with praises in the highest degree since it cures fundamentally if it be exhibited for four or six weeks according to the state and gravity of the disease along with the use of purgatives and sudorifics."

For external application it is no less admirable. "Just as its internal use is singularly effective so also its external is clearly powerful, since by reason of the same principle . . . it soothes irritated nerves, purifies the impurities of the humors, reduces the tone to equilibrium and consolidates disunited parts. According it is administered with success in wounds for staunching the blood, in old dripping ulcers for drying them up and in cancroid, fistulous and venereal affections for healing and cleansing them.

"It also exerts great efficiency in scattering external tumors and in dissipating edematous and erysipelatous affections of the feet. Lastly its virtue is most worthy of praise in affections of the fauces, as well in simple sore throat (anginodeis) as in venereal affections."

A strangely familiar and modern touch is felt in the chapter devoted to methods of administration.

"Since nowadays it is a requisite by the practitioner of medicine that he should cure not only quickly and safely but also even pleasurably—every merit and every advantage are united in this, that crude medicines are not to be exhibited, but those that are unpleasant and nauseous to the sick are to be put in palatable form by suitable preparation and thus rendered more agreeable to the palate and more fitted for consumption."

Pimpinella when the taste is unpleasant should be given in powders, or in essences. It is regrettable to observe that the author thinks that simple spiritus frumenti is not sufficiently penetrating to extract the essence satisfactorily.

Then follows a report of sixteen cases cured by this remedy:

Achores and Tinea, the essence used, Erysipelas suppurative and ulcerated by cataplasm and essence, Arthritis vaga by powder, Ischiadicus morbus (femoro-popliteal neuralgia) by essence and powder, Hysterics with complications by essence and plaster, Catarrh, Hydrops anasarca, Testiculus venereus by essence of Pimpinella and Bals. Copaiva, Sterility by reason of Fluor alba by essence and infusion, Varioli confluent by powder, Weeping ulcer in the cheeks and chin from receding Morbilla (probably syphilitic) by essence, Erysipelas by essence, Petechial Fever by essence and infusion, Pleuriticoperipneumonic Fever by infusion, Coryza by infusion, Calculus by essence.

It must not be thought that Harnisch relied upon Pimpinella alone—any more than Thomson relied upon Lobelia alone.

We find him employing in conjunction with Pimpinella

Unguentum Rosae Nicotian.
Ol. Tart.
Syr. Cort. aurant.

Empl. saponat. camphor.
Galbanum.
Ess. Castor.
Flor. Arnic.
Mell. Rosar.
Rhubarb.
Pilulas polychrestas Hallenses.
Gummi Myrrh.
Gummi Mastich.
Folia recentia Tiliae.
Glycyrrhiz.
Tussilag.
Sambuc.
Chamom. Fol. & Rad.
Butyrum.

One can only say that he was a little more consistent than Thomson in the employment of native plants.

NOTES

1. Samuel Thomson was born February 9, 1769, in the Town of Alsted, Cheshire County, New Hampshire, and died in 1843. Almost wholly self-taught, he developed theories of his own: one is mentioned in the text, another was that minerals being of and in the earth tended to draw men to the grave while plants whose tendency was to grow upward raised them from the earth.

He has given the story of his life in a 12 mo. of 256 pp. *A Narrative of the Life and Medical Discoveries of Samuel Thomson.* . . . I use the sixth edition, Columbus, Ohio, 1832.

He and his school had much to do with the abolition of the practice of bleeding—his follower, Dr. Richard Hare Clarke of Cobourg, Ontario, was the protagonist of the opposition to bleeding in Upper Canada. Most of Thomson's followers ultimately joined the Eclectic School—Dr. Clarke among them (who was one of my preceptors, *Consule Planco*).

2. See *New Guide to Health or Botanic Family Physician* . . . by Samuel Thomson, Hamilton (Upper Canada), 1832, preface (by) L. Meeker Day, p. 4.

3. See *A Narrative of the Life and Medical Discoveries of Samuel Thomson,* etc., p. 8.

4. *Ibid.*, p. 27.

5. *Ibid.*, pp. 149, 150.

6. *Ibid.*, p. 122. The extraordinary story of Thomson's trial for murder will be found in (1809) 6 Massachusetts Report (Tyng), Commonwealth v. Samuel Thomson, pp. 134-142. Thomson gave the lad his "coffee" with a decoction of Marsh-rosemary (*Statice Limonium*) mixed with the bark of bayberry bark (*Myrica cerifera*)—the main medicine was *Lobelia inflata* (Linn.). Thomson was acquitted.

7. *A Narrative of the Life and Medical Discoveries of Samuel Thomson,* p. 128.

8. *Ibid.*, p. 141.

9. *Ibid.*, p. 128.

10. *Ibid.*, p. 152.

11. *Ibid.*, p. 134.

12. *Ibid.*, p. 19.

13. *American New Dispensatory,* by James Thacher, M.D., Boston, 1810, 8 vo., 1813, 8 vo., 1821, 8 vo. Thacher, born at Barnstaple, Mass., 1754, officiated as surgeon in the principal battles of the American Revolution and subsequently practised at Plymouth, where he died, 1844; he was a somewhat voluminous writer.

14. *A Narrative of the Life and Medical Discoveries of Samuel Thomson,* pp. 30, 32, 33.

15. This passage is not to be found in Kalm's *Travels* but in his *Recueil des Mémoires de l'Acadamie de Stockholm,* 1750. The only Lobelia mentioned in the *Travels* is Lobelia cardinalis, vol. iii, p. 193, German ed., Gottingen, 1764—he found it between Philadelphia and New York.

16. Meditationes Botanico—
Medicae de
Planta Quadam Marchiae Propria
PIMPINELLA NIGRA,
Quibus Demonstratur,
Illam in Multis Morbis Insignem Possi—
dere virtutem et efficaciam, pertractatae
et Editae
A
L. Iohanne Andrea Harnisch
Med. Pract. Geran.
Lipsiae
Sumtibus Haeredum Lankisianorum
MDCCLVII

17. China Root: there were two kinds, best known, viz.: *Smilax China,* Linn., closely allied to Sarsaparilla, which was the kind grown in Sicily and elsewhere in Europe; and the kind from India (i. e., the West Indies), American or Bastard China, *Smilax pseudo-China* of the West Indies and Carolina. They have much the same qualities.

18. The French called Syphilis, *Mal de Naples,* Latinized *Morbus Neapolitanus;* the English and others, French Pox, Latinized *Morbus Gallicus*—there were literally scores of other names. In Iwan Block's work "Der Ursprung der Syphilis" (Jena, 1901) a list of names alone fills eighteen pages—pp. 297-315. See my Article "The Origin of the Word Syphillis," in the NEW YORK MEDICAL JOURNAL for May 4, 1921.

19. This Hecker was the botanist Johannes Julius Hecker (1707-1768), who published his *Einleitung in die Botanie* (Introduction to Botany) at Halle in 8 vo. in 1734.

Matthiolus (Peter Andrew Mattioli, 1501-1577), an eminent physician and medical botanist born at Sienna, educated at Venice and Padua originally for law, then for medicine, practised in Sienna, Rome and elsewhere—he died of the plague at Trent. He published his *Apologia versus Amatum Lusitanium* at Vienna in 1558, and his vegetable Materia Medica under the title *Opuscula de Simplicium Medicantorum* . . . at Vienna in 1564.

Amatus Lusitanius (John Roderigo Amato), a Portuguese physician and medical writer of Jewish origin (1511-?, not earlier than 1561) was educated at Salamanca and he taught medicine at Ferrara and Ancona. He remained attached to his religion and after narrowly escaping the Inquisition removed to Ragusa and then to Thessalonica. In his work *Enarrationes in Dioscoridem,* Venice, 8 vo., 1553; Strasburgh, 1554, and Lyons, 1557, he attacked Matthiolus, who retaliated with his "Apologia adversus Amatum," *ut suprâ*—this Apologia obtained great celebrity as a crushing reply.

20. The ordinary Spanish for watermelon is Sandia or melón de agua: but in South America, it is often called Patilla.

21. "Pampinus" is perfectly good classical Latin, being found in Pliny in this sense: Vergil, Georgics I, 448 and Horace, Odes iv, 8, 34, use it in the sense Vine-leaf or foliage of the vine.

22. Of course from the Latin *Piper,* pepper: *Pipernella* is not found in classical Latin.

23. Joseph Pitton de Tournefort (1656-1708), the celebrated botanist, born at Aix, was educated there for the Church but turned to botany. After collecting for two years he studied medicine at Montpellier but was appointed Professor of Botany at the Jardin des Plantes, Paris. His principal work is *Institutiones rei herbariae* in three volumes, Paris, 1700: he also published *Histoire des Plantes qui naissent aux Environs de Paris, avec leur usage dans la Médicine,* Paris, 1698, 12 mo.

24. A term formerly much used to indicate a medicine for expelling foul or corrupt humors from the blood or to prevent evil effects from poison taken inwardly; it is still occasionally used, e. g., in the *New English Dictionary.*

25. Apophlegimatisans—applied to medicine for removing phlegm from the head—either *per nares,* i. e., errhine, or *per os,* i. e. sialagogue.

OSGOODE HALL.

Contributors to the Science of Medicine

SIR ASTLEY COOPER

Sir Astley Cooper was the first celebrated surgeon in England who learned his anatomy and much of the medical science he possessed from the great John Hunter. While he was not the intellectual successor of John Hunter, Hunter's influence was beneficial and he had the wit to perceive, as many of his medical and surgical brethren of the day had not that wit, that Hunter was not "an imaginative speculator, and anyone who believed in him a blockhead and a black sheep in the profession." Cooper was a born surgeon and a practical man with a keen shrewd brain and one who advanced the art of surgery immensely.

Astley Paston Cooper was a grandson of a surgeon in Norwich, England, and his father was a clergyman in Norfolk, of which Norwich is the county town. His boyhood was a stirring one and marked by a succession of hairbreadth escapes and exploits demanding coolness and audacity. He had no taste for books and like John Hunter he had a free youth, which was neither improved nor spoiled by systematic training. In 1784 he was articled to his uncle, a well known surgeon, in London, and transferred to Mr. Cline, one of the leading surgeons of the day. Under Cline young Cooper imbibed the spirit of Hunter's teaching from one of his most enthusiastic pupils, for Cline's judgment of Hunter was, that there seemed no comparison between his great mind and all who preceded him. Cooper spent one winter session in Edinburgh, having already made considerable progress in anatomy and surgery. After returning from Edinburgh he attended the lectures of John Hunter and those of other celebrated lecturers. In 1789, being only twenty-one, he was appointed demonstrator at St. Thomas's Hospital. Two years later Mr. Cline obtained for him the joint lectureship with himself in anatomy and surgery at St. Thomas's Hospital.

In 1791 he married a rich girl and in June, 1792, the young surgeon and his bride visited Paris and were there during the three terrible first months of the French Revolution. Cooper spent much time in studying French methods of surgery, and in attending the debates of the National Assembly. His safety was insured by wearing a democratic badge and by friendship with leading revolutionists in England. Owing to his wife's money he was placed beyond pecuniary anxiety and was able to devote himself mainly to study and teaching. He went to the hospital before breakfast to dissect for lectures, and he also demonstrated to students before the lecture hour. He lectured from two until half past three, and on three evenings in the week lectured on surgery. He was the first in the borough hospitals, St. Thomas's and Guy's, to separate surgery in lectures from anatomy and physiology. At about this time he was selected as lecturer on anatomy at the College of Surgeons.

In 1800 Astley Cooper was appointed surgeon to Guy's, and it was at this time that Mr. Travers, who became his articled pupil,, said of him that he was the handsomest, most intelligent looking and finely formed man he ever saw. According to the custom of the time he wore his hair powdered, with a queue. Dr. William Roots says: "From the period of his appointment to Guy's until the moment of his latest breath, he was everything and all to the suffering and afflicted. His name was a host, but his presence brought confidence and comfort; and I have often observed that on an operating day, should anything occur of an untoward character in the theatre, the moment Sir Astley Cooper entered, and the instrument was in his hands, every difficulty was overcome, and safety generally insured."

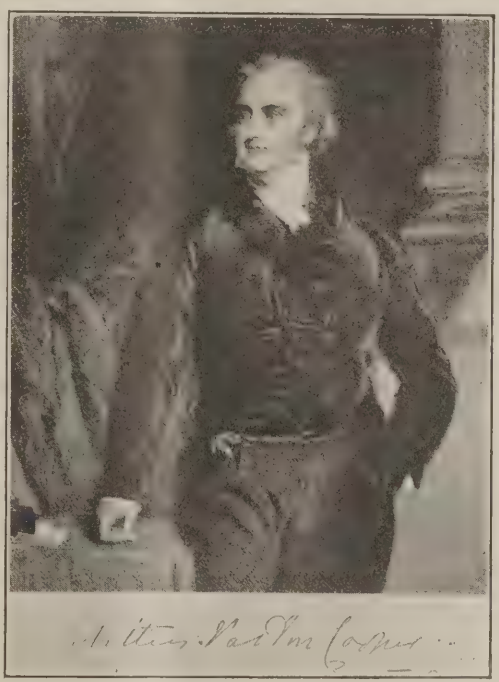
To Sir Astley Cooper, as to most men who rise to eminence, remunerative practice came but slowly. "My receipt," says he, "for the first year was £5 5s.; the second £26; the third £54; the fourth £96; the fifth £100; the sixth £200; the seventh £400; the eighth, £610; the ninth, the year in which he was appointed surgeon to the hospital, £1,110. He never, however, forgot the scientific side of the profession, even though it cost him money. Thus we read the following entries in regard to obtaining the body of a man on whom he had operated twenty-four years before: "Coach for two there and back, £3 12s.; guide and coachman, six shillings; expenses for two days, £1 14s. 6d.; carriage of subject and porter, twelve shillings and sixpence; subject, £7 7s.; total, £13 12s. From 1806 to 1815 Sir Astley Cooper reaped a rich harvest. In one year his income amounted to £21,000, and for several years it was £15,000 a year. One merchant prince paid him £600 a year.

The story of another who tossed him a check for a thousand guineas in his nightcap after a successful operation for stone is well known. In those years he rose at six, dissected privately until eight, and from half past eight saw large numbers of patients gratuitously. At breakfast he ate only two well buttered hot rolls, drank tea, cool, at a draught, read his paper for a few minutes, and then betook himself to his consulting room. Patients crowded his rooms and besieged Charles, his serving man, using manifold devices to get the earliest interview possible. Sometimes the people in the hall and anteroom were so importunate that he was driven to escape through his stables and into a passage by Bishopsgate Church. At Guy's he was awaited by a crowd of pupils on the steps and at once went into the wards. His few pertinent questions and quick diagnosis were of themselves remarkable, no less than the judicious, calm manner in which he enforced the necessity for operations when required.

At two o'clock the students would suddenly leave the wards, run across the street to old St. Thomas's Hospital, and seat themselves in the anatomical theatre. After the lecture, which was often so crowded that men stood in the gangways and passages near to gain such portions of his lecture

as they might fortunately pick up, he went round to the dissecting room, and afterwards left the hospital to visit patients or to operate privately, returning home at half past six or seven. Every spare minute in his carriage was occupied in dictating to his assistants notes or remarks on cases or other subjects on which he was engaged. At dinner he ate rapidly and not very elegantly, after dinner he slept for ten minutes or so, and then started to his surgical lecture, if it were lecture night. In the evening he was usually again on a round of visits up to midnight.

Dr. Pettigrew, in his *Medical Portrait Gallery,* thus describes the overpowering influence Sir Astley Cooper had upon his pupils: "I can never forget the enthusiasm with which he entered upon the performance of any duty calculated to abridge human suffering. This enthusiasm, by the generosity of his character, his familiar manner, and the excellence of his temper, he imparted to all around him, and the extent of the obligations of the present and of after ages to Sir Astley Cooper in thus forming able and spirited surgeons can never be accurately estimated. He was the idol of the Borough School—Guy's and St. Thomas's are on the south side of the Thames in the district popularly known as the Borough. The pupils followed him in troops; and like to Linnaeus, who has been described as proceeding upon his botanical excursions accompanied by hundreds of students, so may Sir Astley be depicted traversing the wards of the hospital with an equal number of pupils listening with almost breathless anxiety to catch the observations which fell from his lips. But on operating days this feeling was wound up to the highest pitch. The sight was altogether deeply interesting; the large theatre of Guy's crowded to the ceiling, the profound silence obtained upon his entry, that person so manly and truly imposing and the awful feeling connected with the occasion can never be forgotten by any of his pupils. The elegance of his operation, without the slightest affectation, all ease, all kindness to the patients, and equally solicitous that nothing should be hidden from the observation of the pupils, rapid in execution, masterly in manner, no hurry, no disorder, the most trifling minutiæ attended to, the dressings generally applied by his own hand, the light and elegant way in which Sir Astley Cooper employed his instruments always astonished me, and I could not refrain from making some remarks upon it to my late master, Mr. Chandler, one of the surgeons of St. Thomas's hospital. I observed to him that Sir Astley's operations appeared like the graceful efforts of an artist in making a drawing. Mr. Chandler replied: "Sir, it is of no consequence what instrument Sir Astley uses; they are all alike to him, and I verily believe he could operate as easily with an oyster knife as with the best piece of cutlery in Laundy's shop."



For two seasons he lectured at the College of Surgeons on comparative anatomy. Not being deeply read in the subject he resolved to see what industry would do and restricted himself to three or four hours' sleep that he might gain additional time for the dissection of animals. He also employed several assistants to dissect for him, and the result was that his specimens came by coachloads to each lecture. At this time he signalized his skill by his celebrated operation of tying the aorta for aneurysm in a case in which life was in the direst peril. The ease with which he prepared for the operation and the masterly skill and success with which he completed it, without the aid of anesthetics be it remembered, excited admiration throughout the profession. Some years later, in 1824, he amputated at the hip joint, the first time it is believed the operation had been performed. The whole operation with the dressing of the wound took half an hour. Sir Astley's fame was international, so that distinguished foreign surgeons never failed to visit him at Guy's Hospital. In January, 1925, he resigned his surgeoncy at Guy's and lecturership at St. Thomas's, owing to the impairment of his health. The death of his wife in 1827 so greatly affected him that he determined to retire from practice altogether. Before the end of the year, however, he found the boredom of retirement unsupportable and returned to town and was soon in full practice again. He wrote several books, among these *Diseases of the Breast, Diseases of the Testes,* and *The Anatomy of the Thymus Gland.* He was twice president of the College of Surgeons and in 1833 received the decoration of the Legion of Honor from the King of the French. He died on February 13, 1841, and is buried beneath the chapel of Guy's Hospital.

There is little doubt that Sir Astley Cooper was one of the great surgeons of the world. He operated in the days when rapidity was almost a *sine qua non* of successful surgery. As there were no anesthetics there was no time to consider the next step as now, and because antisepsis or asepsis was unknown promptitude was additionally essential for successful surgery.

According to an estimate made by himself he was a better anatomist than operator. Rapid and correct diagnosis was his forte and the same faculty made his prognosis good. In his opinion his success depended up his zeal and industry. Contemporary medical history records, however, that as an operator he had few equals and with the exception of Robert Liston, perhaps no superior.

Editorial Articles

LENGTHENING OF LIFE OF GREAT MEN

The average length of life is considerably greater than formerly. In fact, it has been stated recently by a statistician, although it has been whispered that some statisticians are liable to err, that a child born today has a reasonable expectation of twelve years more life than his grandfather. However, it is certain that life has lengthened and it seems is still becoming longer. Moreover, the saving of infant life in civilized countries and especially in English speaking countries is proceeding apace almost *pari passu* with the decrease of the birth rate. An article which came out in the March issue of the *Nineteenth Century and After* brings forward some startling figures with regard to the length of life. The author, Mr. A. Wyatt Tilby, points out that if any consecutive death announcements in the daily journals, omitting the rare announcements of deaths under the age of twenty-one, are scanned, it will be found that the average length of life is 70.3 years. But the figure is deceptive, because the announcements refer principally to the more prosperous classes of the community, and because the obituaries of women almost invariably omit any mention of age. However, what Mr. Tilby set out to discover is whether exceptionally distinguished men in all branches of activity have an overaverage or an underaverage length of life.

From the report it appears that rush is rather conducive to long life than not, and that the doer stands a better chance of long life than the thinker or dreamer. Mr. Tilby holds that the comparatively long life of the men of action as well as their eminence are largely due to the fact that they are a naturally selected class, that is, a man is not likely to rank high as a statesman or a soldier unless he is stronger mentally and physically than the average man. The contemplative class, on the other hand, includes men of inferior physique. Indeed one reason for their contemplative habits may be the state of their health, which precludes any great expenditure of physical or nervous energy. At the same time a man can cogitate, compose, or paint, with half a lung out of action, or a disordered gastrointestinal tract, and many who do this, in the nature of things, die young. But even contemplative distinction is an advantage, for the average of those who have reached this distinction is 64.3, as against the sixty-two of the ordinary individual. Actors have an average life of nearly seventy years. A busy full life tends to longer life than a peaceful thoughtful one, although of course, as pointed out previously, men of action, as a rule, are such because they are bountifully endowed with vitality, not necessarily of especially strong physique, but with abundant nervous energy. It is frequently the small wiry individual, instinct with the vital spark, who lives the longest and does the best work.

The "will to live" and an object in life must be taken into account. The person who has no strong aim in life or no one or nothing in particular to live for is lacking in the will to live. The mind has a great influence over the body, and when the strong desire to live has become dull, life is not likely to be long. Moreover, it is a fact that life has lengthened and that great men, as a rule, live the longest.

TABACOSIS

Tobacco smoke, besides nicotine, the proportion of which varies with different kinds of tobacco, also contains carbon oxide, carbonic acid, ammonium cyanide, pyridine, and various other basic substances of highly toxic nature, but in minute quantity. The absorption of these substances, in minimum amount, but continued for a long time, produces conditions which may be overlooked although they are dangerous for the person's future. These occur in the functions of the digestive and nervous systems. There is irritation of the buccal, pharyngeal, and laryngeal mucosæ with the frequent production of a slight cough. The appetite decreases, while digestion becomes difficult when immoderate smoking is indulged, and diarrhea may also ensue.

There are two characteristic nervous symptoms of nicotinism—namely, palpitation and weakened memory, especially for proper names. At a more advanced phase, chronic tabacosis produces nausea, vertigo, and dizziness, after which a decrease of the acuity of vision is noted. The impregnation of the neurons by nicotine and by the other products of incomplete combustion of tobacco, differs from the saturation of the organism by alcohol, in that it is not tenacious, while alcoholic impregnation is extremely persistent. In reality, it is sufficient to cease the use of tobacco for all the untoward symptoms rapidly to subside.

It sometimes happens that the disturbances of nicotinism suddenly develop in a smoker who, nevertheless, has not increased his daily ration of tobacco. Searching for the cause of this sudden and surprising susceptibility, it will be found that it can be attributed to the fact that the patient returning from a sojourn in the country, where he smoked in the open, to his city abode, where he smokes in his con-

fined rooms, inhales for hours an atmosphere saturated with tobacco fumes which, in reality, means that he has smoked the same cigars or pipe several times over. The same applies to persons who have stopped smoking on medical advice, and continue, nevertheless, to present disturbances of tabacosis, this persistence being readily explained by the fact that they still frequent the homes of people who smoke, and pass considerable time in rooms saturated with tobacco smoke.

For a similar reason an attenuated form of nicotinism may be met with in women and children who do not smoke. It is to be recalled that subjects with a nervous and especially a rheumatic temperament badly tolerate tobacco, and that women and children offer in respect to this a great susceptibility. Likewise the fact should not be overlooked—in order to explain sudden outbursts of accidents due tobacco or caffein, that tobacco and coffee are, in a notable degree, antidotes, and that their absorption is usually simultaneous. Now, in the case of a heavy smoker and consumer of coffee, it may for some reason happen that he decreases his daily intake of coffee or even ceases to take it, the result being that the accidents of nicotinism immediately develop.

In the same circumstances, the sudden suppression of the use of tobacco will cause the appearance of the minor disturbances dependent upon the consumption of coffee. Hence it is necessary, when a decrease or complete suppression of either one of these psychic stimulants is required, to advise the decrease of each at the same time.

THE PYELONEPHRITIDES

The latest researches on the pyelonephritides show the action of the numerous intestinal bacteria in these renal infections. For example, Heitz-Boyer, by demonstrating the existence of an enterorenal syndrome in these cases, has shown that the infection, starting from the intestine, reaches the kidney and renal pelvis by the circulation, but occasionally the infection follows a direct route at those points where the digestive tract is in direct contact with the kidney. From this it follows that the bacteria most often in play in these infectious processes are those normally living in the intestine and whose number has been increased or their virulence increased by some enteric affection, such as enterocolitis, appendicitis, or even typhoid fever. In the pus of pyelonephritis will be found the bacterium coli or similar germs, such as the enterococcus, and in certain special circumstances the bacillus of typhoid. Le Fur has pointed out that the staphylococcus may play an important part in renal infection and is often as unsuspected etiological factor.

These ideas have as a corollary some changes in the therapeutics which have been resorted to until recently. Among other methods, vaccinotherapy has become an important resource. According to the given case, vaccines containing the staphylococcus, the enterococcus, and almost always the colon bacillus are to be employed. The most recent clinical data published show the really remarkable results obtained by vaccines in pyelonephritis, these having singularly facilitated the treatment. This does not imply that the older treatments are to be discarded. Vaccines act rather more on the general infection than on the local renal manifestations. Hence it follows that disinfection of the urinary tract with formin should still be employed. Balsamic medication, with disinfectants, still remains the basis of treatment of pyelonephritis, the only inconvenience arising from it being the occasional congestive action on the urinary mucosa, but this untoward effect can be avoided if the substance prescribed be free from impurities, as irritant action will thus be eliminated.

The conclusion is that at present the proper treatment of these renal infections is still intestinal and urinary disinfection combined with the use of vaccinotherapy.

BODYSNATCHERS

When we were younger, there was talk of bodysnatchers and graverobbers and a general impression in our village (at least among the children) that they were more than a myth. Just who they were and why seemed a mystery about which there was little conjecture, though dissecting rooms were sometimes spoken of in this connection. There is mention of bodysnatching in Dickens's *Tale of Two Cities,* but the object, as we recall the story, was robbery. We have doubted that the gruesome business was ever practised except for securing jewelry, but we find we were mistaken.

Dr. Cobb tells, in the *Boston Medical and Surgical Journal,* of how his grandfather, Archelaus G. Smith, was so keenly interested in his cases that he never let slip an opportunity of securing a postmortem examination. "One of his patients, 'in spite of all he could do, wasted away and finally died.' He was determined to learn the cause of death, but an autopsy was refused, so after the funeral he went at night to the cemetery and brought the body back to his barn, where he made the examination and then prepared and mounted the skeleton, which was thereafter kept in a closet off his study. Years later this skeleton was accidentally recognized by a suspicious relative who based the identification on the fillings of the teeth. Dr. Smith was brought to trial. When it was proved that the grave had in truth been robbed, he was so fearful of conviction

that he had horses stationed every five miles in order to make an escape over the Canadian border. But the lawyers succeeded in discrediting the witness who identified the skeleton—he became confused and said the telltale fillings were on the right instead of the left side of the jaws. Thus Dr. Smith was acquitted and did not have to make use of his plans of escape."

To the average and, indeed, to the great majority of medical students, such eagerness for autopsies must seem abnormal, and certainly is extraordinary, but there have been such enthusiastic seekers after truth. We do not like to question the accuracy of the story by suggesting that dental fillings must have been rare a hundred years ago, but, after all, their rarity may argue for the truthfulness of the tale, inasmuch as they would have served better by way of identification than in the present day when they are so common. It is a good story and we like to believe there were such diggers after knowledge among the bodysnatchers. They set us a shining, if unlawful, example, but there is little danger that any of us would be so daring as to follow it. Fortunately we live in a day when anatomical and pathological material is obtained more readily and without breaking the laws.

BESREDKA'S VIEWS ON IMMUNITY

It seems that Dr. Prosch and Professor Dahmer of Berlin have isolated the virus of foot and mouth disease, at least, the *Lancet* of May 10th in an editorial accepts their claims as genuine, subject to confirmation by the Berlin Department of Health and the Koch Institute. It is a very minute organism, ultramicroscopic. Professer Dahmer has succeeded in preparing a culture wherein the bacilli may be propagated so that it appears that not only has the virus been isolated, but an inexpensive method of propagating the germs and thus making a vaccine has been devised. This is good news, as foot and mouth disease has been the cause in recent years of great losses to farmers and the community at large. In California the disease has been particularly rife, and correspondingly costly. If, as the Berlin investigators state, a means for detecting filterable viruses has been thought out, the minute bacilli of many infectious diseases which attack human beings will be discovered, and probably in most instances a method of producing immunity established.

In this connection Besredka's views on immunity are especially interesting, as he made certain experimental observations on foot and mouth disease. Besredka's contention is that immunity in certain diseases is developed, not as is the usual belief in the blood stream, but in the cells of the particular tissue attacked by the causal organism. In support of this contention, he reports more favorable results when vaccines are administered directly to the tissues which are predilection sites for the attacking organisms, that is, the intestine in typhoid fever and the skin of guineapigs in anthrax, than when vaccination is made subcutaneously in the usual way. It is common knowledge that among the filterable viruses there exist certain groups which have a well defined affinity or predilection for certain tissues. In this connection a neurotrope group, attacking nerve tissues, and an epitheliotrope group, attacking the epithelial covering of the skin and mucous membranes, may be recognized. In the former group may be included such viruses as those of rabies and encephalitis of rabbits; while to the latter group belong smallpox, cowpox, foot and mouth disease, and stomatitis of sheep. Terni suggested that an immunity produced by a natural attack of foot and mouth disease could be separated into tissue immunity and blood immunity. These suggestions have been fully confirmed.

The conclusions from these confirmatory investigations appear to justify the conclusion that a separate tissue immunity is present in the epithelial lesions immediately after the generalized eruption has subsided, about forty-eight hours after inoculation, whereas the blood immunity only develops some five days later. With regard to the immunity from a natural attack, it has been found that the tissue immunity is considerably shorter than that brought about by blood immunity. It would seem then that tissue immunity is a factor of no great value in protecting against foot and mouth disease, and that it is upon blood immunity that reliance must be chiefly placed for protection against this disease. At any rate, blood immunity is more lasting.

Consequently it may be confidently assumed that Besredka's claim that immunity is exclusively or chiefly a property of the cells of the attacked tissues does not stand in the instance of food and mouth disease. Whether this assumption holds for other filtrable viruses of human disease similar to those of foot and mouth disease remains to be proved, although the argument in favor of the validity of this assumption appears to be strong. The question of whether a blood immunity is superior in all cases to a tissue immunity is a most important one, and worthy of close consideration. It may be emphasized that comparative medicine may greatly aid in solving many of the obscure problems in the causation of disease and may point the way to their prevention and perhaps extirpation. The cooperation in research work of members of the medical and veterinary professions is a good augury for the future of research.

VENEREAL DISEASE IN GREAT BRITAIN

During and since the war, venereal disease has been quite prevalent in Great Britain; so much so, indeed, that it aroused a great deal of apprehension and means were sought to combat it. The National Council for Combatting Venereal Diseases was formed, and this body devised methods for treating the diseases in their early stages. However, it was recognized by many British authorities that if the disease were to be stamped out drastic preventive measures must be introduced. For this purpose the Society for the Prevention of Venereal Diseases was established. Sir Arbuthnot Lane and Dr. J. H. Sequiera were among the original members, but the success of the society was largely due to the efforts of the secretary, Dr. H. Wansey Bayly.

This society recognized that the only hope of abolishing these diseases was by radical methods of prevention. The main one of these was that druggists should be permitted to sell disinfectants, to be used immediately after intercourse. Of course, such a proposal raised a storm of protest, chiefly on moral grounds, but the society stood firmly by their expressed views. However, the National Council for Combatting Venereal Diseases opposed the suggestions of the society on various grounds, and the two bodies, each of them representing the highest medical opinions of the country, have been at loggerheads on the question. This attitude has been greatly to the disadvantage of the community at large, and it is satisfactory to state that an agreement on the recommendation in dispute has been arrived at between these bodies, which only requires ratification by the Ministry of Health and the Government to become law.

A joint conference was held between the National Council for Combating Venereal Disease and the Society for the Prevention of Venereal Disease in London, on October 30th last, at which the following resolutions were adopted. 1. That the ultimate fusion of the two societies is desirable. 2. Subject to the approval of their respective executives, this conference resolves itself into a deputation to the Minister of Health to urge "that the law should be altered so as to permit properly qualified druggists to sell *ad hoc* disinfectants provided such disinfectants are sold in a form approved and with instructions for use approved by some competent authority. 3. That this conference recommends that the respective executives of the two societies should each appoint not more than five members to form a liaison committee between the two societies and to explore the possibilities of fusion.

It seems now that the two societies are in agreement with regard to resolution 2, which was the chief stumbling block to the union, that there is nothing to prevent their amalgamation. This will be a long step forward, as it stands to reason that so long as there is division among the best authorities, and the medical profession generally, as to the most effective ways of treating and preventing venereal diseases, the public will have little confidence in the medical profession, and everyone will suffer. The only manner in which venereal disease can be abolished or abated is for a united medical profession to take counsel with respect to the most effective methods of preventing and treating these infections and especially of preventing them. An infected person, and a woman in particular, is a menace to the community, and therefore prevention is far better than cure as regards syphilis and gonorrhea. The method recommended by the British Societies may not be the best possible, but it is worthy of trial and in the meantime the brains of those skilled in the matter will be learning by experience and thinking out new ideas to cope successfully with an unparalleled situation.

EFFECT OF CARBONATION ON BACTERIA

An instructive experimental study of the effect of carbonation on bacteria in beverages has recently been made through the Mellon Institute of Industrial Research of the University of Pittsburgh, the results of which are published in a recent number of the *American Journal of Public Health.* These showed clearly the marked inhibitive and germicidal properties of carbon dioxide, and the higher the pressure of this, the more rapid and valuable the effect. When not carbonated, the average bottled beverage is an especially suitable medium for accelerated bacterial propagation, as a result of which it becomes highly contaminated. On the other hand, carbonation prevents multiplication of bacteria and causes reduction in count. The result is that a beverage carbonated and bottled under sanitary conditions, and with sufficient pressure, remains sanitary and improves with storage. If this beverage should in some way become contaminated, there would be no multiplication of bacteria, but a gradual sterilization effected, even under adverse conditions of temperature. The findings indicated that, since the effect on bacteria is proportional to the amount of carbonation, it would be advantageous to the bottler, as well as a safeguard to the public, to adopt higher carbonating pressure than is customary.

Pasteurization as a substitute for carbonation is criticized as changing the flavor and appearance of the beverage. The writers advocate that the bottler should not rely wholly upon the effect of carbonation to insure a sanitary condition of his products, since carbonation with insufficient gas may result in a dangerous beverage being marketed. Even when a high degree of carbonation is used, an initially dangerous concentration may be still too high when the beverage is consumed, if this is done immediately after bottling.

THE FRIENDS OF MEDICAL PROGRESS

The Friends of Medical Progress is a recently organized society whose aim is the promoting of medical investigation. It is a national lay organization which will undertake to inform the public of the truth about the value of scientific medicine to humanity and to animals, and which will oppose legislation dangerous to public health and welfare. The headquarters of the society are at 28 Newberry Street, Boston.

An editorial in a recent number of the *Bulletin* of the New York City Health Department comments on the value of such a body as the Friends of Medical Progress as follows: "Within the last fifty years many societies have been organized to prevent the advancement of medical science by experimental methods, to break down the bulwarks of preventive medicine, and to substitute for the scientific treatment of disease various forms of pseudoscience and quackery. We are in a position to know that these organizations have reached the danger point. It must be fully understood that if this antimedical program should succeed, the hands of the doctors would be tied and no further progress in experimental medicine could be expected. No reliable insulin would be available for diabetes, no antitoxin would be possible for diphtheria or lockjaw, no vaccine could be procured to protect the country against smallpox, and it would be utterly impossible to test such essential drugs as ergot, pituitrin and digitalis. With a view to resisting the efforts of these societies, the 'Friends' have been organized and incorporated."

Obituary.

ERNEST LAPLACE, M.D.

Philadelphia

Dr. Ernest Laplace, well known in this country and abroad, not only for his surgical work but for his activities in connection with Franco-American relations, died at his home in Philadelphia on May 15th from heart disease. He had been ill for a week, but had rallied and seemed to improve, so that death came quite unexpectedly.

Ernest Laplace was born at New Orleans, July 9, 1861, the son of Basil Laplace, a well known chemist, and Eugénie Sauvage Laplace. He was educated at Georgetown University, and received his medical degree from the University of Louisiana. Later he went abroad for further medical work, pursuing courses at the Faculté de Médicine at Paris, from which he received a second degree in medicine, and studying under many famous men, among them Pasteur, Lister, Koch, Virchow, and Billroth. He was the possessor of one of those rare vials of veal broth sealed seventy-six years ago by Pasteur to prove that there can be no decomposition without bacterial growth, and no bacterial growth without contamination.

In 1888 Dr. Laplace was appointed demonstrator of pathology and bacteriology at Tulane University, and visiting surgeon to the Charity Hospital of New Orleans. In 1889, when he was only twenty-eight years of age, he was called to the chair of pathology in the Medicochirurgical College of Philadelphia, and in 1892 was elected professor of surgery, pathology, and clinical surgery in the same institution. He held the positions of surgeon to the Philadelphia Hospital, St. Agnes's Hospital, and the Samaritan Hospital. In 1894 he was appointed by Archbishop Ryan to succeed the late Dr. William V. Keating as medical director of St. Joseph's. He was also surgeon to the Medicochirurgical Hospital and to the American Hospital for Diseases of the Stomach. Later he was appointed a member of the Pennsylvania State Quarantine Board, and was commissioned to visit Berlin to study the Koch treatment for tuberculosis. In 1916 Dr. Laplace was appointed professor of the principles of surgery at the Medicochirurgical College, and this chair was later merged with that of surgery, pathology, and clinical surgery, which he had occupied for nearly twenty-five years.

In 1923 the Academy of Paris made Dr. Laplace one of its officers. He was also a member of the Anatomical Society of Paris, the National Association of Military Surgeons, the American Medical Association, the Philadelphia Academy of Natural Sciences, and several other local medical societies. In 1921 he was made a member of the Pennsylvania State Council of Education, and held the presidency of the Medical Club of Philadelphia in 1922. During the World War, Dr. Laplace served with the rank of major at one of the military hospitals in the South. After the War, he made several trips abroad as an unofficial liaison officer in the interest of preserving friendly relations between this country and France. The latter country had made him in 1906 a Chevalier of the Legion of Honor, in 1921 he was advanced to the rank of officer, and in 1923 to that of a commander.

Dr. Laplace was best known to the medical profession as a brain surgeon and authority on diseases of the stomach and intestines. He was the inventor of the forceps used in operations for intestinal anastomosis. His death at the comparatively early age of sixty-three comes as a great loss to the profession.

HARRY RODMAN, M.D.

New York

Dr. Harry Rodman died in New York on April 29th after a brief illness at the age of fifty-one. He is survived by his widow and a son and daughter. Dr. Rodman was graduated in 1895 from the College of Physicians and Surgeons, after which he went to Mount Sinai Hospital where he received his clinical training. His specialties were diseases of the joints, and of the ear, nose and throat, and in the practice of these lines of medicine he achieved a marked success and was well known throughout New York City and State.

Dr. Rodman was a member of the American Medical Association and a fellow of the American College of Surgeons. At the time of his death he was vice-president of the Clinical Society of the Hospital for Joint Diseases, surgeon and chief clinician of the Bronx Eye and Ear Infirmary, and chief clinician of the Joint Dispensary of the Hospital for Joint Diseases. His death is a distinct loss to the medical profession of New York.

News Items

Police Department Appointment.—Dr. Seymour Oppenheimer has been appointed chief of the honorary board of consultant surgeons of the police department of New York.

Chlorine Clinic.—The Department of Health has opened a clinic for the study and treatment of certain respiratory diseases by chlorine gas, as part of the public health station at 345 East 116th Street.

Staff Assistants at St. Mark's Hospital.—The Department of Urology at St. Mark's Hospital announces that there are two vacancies in its staff. Application should be made to Dr. Victor C. Pedersen.

Field Representative for Cancer Association.—The American Society for the Control of Cancer has appointed as its field representative, Dr. William F. Wild, who had been the executive secretary of the Minnesota Public Health Association.

Sterilization of Insane.—The state board of eugenics has taken up the matter of operations for the sterilization of the insane conducted at the State Insane Asylum, Montana, some of which were performed without the consent of the board, as provided for in the law.

Health Education Conference.—The Health Education Division of the American Child Health Association has called a working conference on health education, which at the invitation of the Massachusetts Institute of Technology, will be held in Cambridge June 23d to 29th.

Masonic Medical Charity.—The income from the Manhattan opera house, owned by the Consistory of the Scottish Rite Thirty-second Degree Masons of New York, is to be devoted to the establishment and maintenance of a hospital for chronic diseases, including a laboratory bureau for general research.

Doctor de Schweinitz Honored.—Dr. George E. de Schweinitz of Philadelphia was presented with a bronze plaquette at the conclusion of his address to the Société Française d'Ophtalmologie, of Paris. A few days later he addressed the Société d'Ophtalmologie Belgique, and was unanimously elected a member.

Army Medical Services.—Graduation exercises were held on June 6th in the formal garden of the Army Medical Centre, Washington, D. C., for the Army Medical School, the Army School of Nursing, the Army Veterinary School, and the Army Dental School. Diplomas were presented by the Secretary of War.

Brooklyn Society of Internal Medicine.—The following officers have been elected by the Brooklyn Society of Internal Medicine: president, Dr. Bernhart A. Fedde; secretary, Dr. J. Francis Ward; treasurer, Dr. Charles E. Hamilton; and councilors, Dr. L. Buist, Dr. Ed. E. Cornvall, Dr. Robert E. Coughlin, and Dr. Harry Wolfer.

Maryland Health Officers Meet.—The annual conference of Maryland health officers was held in Baltimore, June 6th. A feature of the meeting was an address by Dr. George E. Vincent, president of the Rockefeller Foundation. A discussion was held on the problems of the isolation of pneumonia cases, and etiology and methods of preventing scarlet fever.

New Medical Journal.—The *Franco-British Medical Journal* is soon to publish its first number, through John Bale, Sons, and Danielsson, Limited, of London. This Journal will contain an equal number of English and French articles, the latter in English translation. The object of the Journal is to advance the medical entente cordiale between the two countries.

American Gynecological Society.—The following officers were elected at the annual meeting of the American Gynecological Society: president, Dr. Howard C. Taylor, of New York; vice-presidents, Dr. Franklin S. Newell, of Boston, and Dr. Frederick J. Taussig, of St. Louis; secretary, Dr. Arthur G. Curtis, of Chicago; and treasurer, Dr. Charles C. Norris of Philadelphia.

Medical Women's International Association.—An interesting program has been planned for the meetings of the Medical Women's International Association, which is to be held just before the meetings of the British Medical Association in July. Among the social features are teas at Lambeth Palace, Hampton Court, and at the House of Commons as guests of the Prime Minister. The British Medical Women's Federation will hold a reception.

Cancer Society Meeting.—The first annual meeting of the American Association for the Study and Cure of Cancer was held in Chicago on June 11th.

New Clinic.—The Department of Stomatology of the Midtown Hospital, New York, has recently opened clinics for pyorrhea, extraction of teeth, and oral surgery.

Epidemic of Mumps.—During the month of May, 547 cases of mumps were reported by the Department of Public Health of Pittsburgh, this being a contrast from 68 in the month of May, 1923.

Doctor Lorenz Celebrates Birthday.—A feature of the celebration of the seventieth birthday of Dr. Adolf Lorenz, of Vienna, was the unveiling of a life size plaque at the General Hospital, to commemorate his achievements.

Course in Tuberculosis.—A special postgraduate course will be given August 11th to 23d, by the Fellowship of Medicine and Postgraduate Medical Association of England, at the Hospital for Consumption and Diseases of the Chest.

National Health Council Appointment.—Dr. A. J. Lanza has been appointed executive officer of the National Health Council. Doctor Lanza, formerly of the Public Health Service, has been in Australia assisting in the organization of the Commonwealth Health Department.

Course in Gastroenterology.—A four weeks' graduate course in gastroenterology will be given by Columbia University, at the Vanderbilt Clinic, from July 2d to 30th, and repeated from August 1st to 27th. John L. Kantor, Ph.D., M.D., Associate in Medicine of Columbia University, will be the instructor.

New York Health Officers' Convention.—The annual conference of health officers and public health nurses of the State of New York will be held at Saratoga Springs, June 24th to 26th. Addresses will be made by Dr. Simon Flexner, and by Surgeon General Cumming of the Public Health Service.

Appeal for Austrian Physician.—Through Dr. Henry M. Fischer, of Philadelphia, word has been received that Dr. H. C. Kiehaupt, of Vienna, now over seventy, has been unable to teach for the last four or five years, and is in great want. An endeavor is being made to bring the matter to the notice of the pupils of Herr Kiehaupt, in the hope that his distress may be relieved. Contributions may be sent to Francis Fisher Kane, 718 Real Estate Trust Building, Philadelphia, or direct to H. C. Kiehaupt, Tigergasse 38/16, Wien VIII, Austria.

Intern Training.—The Public Health Committee of the New York Academy of Medicine has passed a resolution to the effect that medical interns in general hospitals should have a brief internship in a hospital for contagious diseases. The city Department of Health has made plans to affiliate hospital training schools of the city, and the Committee resolution continues, . . . "and views with favor the opportunities afforded at Willard Parker Hospital to give opportunities to nurses for special training in the care of communicable disease."

Tuberculosis Research.—The Colorado Foundation for Research in Tuberculosis is being developed by philanthropic citizens of Colorado Springs, to carry on the work done the last eighteen years by Dr. Gerald B. Webb and his associates, of that city. Colorado College has offered temporary laboratory facilities. The trustees consist of fifteen local and national philanthropists, and there is an advisory council including, among others, Dr. Victor C. Vaughan, of Washington, Dr. James A. Miller, of New York, Dr. Lawrason Brown, of Saranac Lake, Dr. Livingston Farrand, of Ithaca, Dr. Allen K. Krause, of Baltimore, and Doctor Webb, who also is to be one of the medical directors.

Neuropathic Hospital.—A great departure in the treatment of mental defects has been made in the planning of the new Neuropathic Hospital, to be built at Bronx Boulevard and East 236th Street, New York. This hospital is designed for the prevention of mental disorders; attendance is to be voluntary; and both free consultations and bed care are to be given. Patients are to be examined on the group diagnosis plan, by consulting specialists representing all branches of medicine. An interesting feature is the attempt to remove, by carefully chosen decorations and furnishing, the institutional bleakness too customary in hospitals. It is estimated that there are at least two hundred thousand borderline cases in New York, for whose care no provision is made until some overt act has been committed, bringing the patient before the authorities.

The New York City Cancer Institute

ISAAC LEVIN, M.D.,
New York.

Malignant tumors occupy an anomalous position in the domain of medicine, in respect to both teaching and practice. In the courses of general or special pathology, in the clinical teaching of internal medicine, surgery, or all the clinical specialties, the student is taught something about cancer, but always as a small part of the specialty under discussion and colored by the narrow orientation of the special teacher. The student ends his medical course without having acquired a comprehensive idea of the whole cancer problem, only having gained the impression that cancer of each organ requires a different complicated surgical operation which he as a general practitioner cannot perform. The cancer patients which he meets later in his practice he either sends to a surgeon and loses track of them or when they were operated upon previously he finds them in an advanced stage of the disease and he neither knows how nor has any desire to take care of them. Gradually the practitioner in medicine gains the impression that each individual cancer patient is a person doomed to death, that the general cancer problem is something vague and entirely separated from clinical medicine, and that cancer research is not a part of general biological and medical research but is a blind search for the end of the rainbow in the form of a cancer cure.

A small group of investigators throughout the world began a coordinated study of the cancer problem about a quarter of a century ago and created centres for their investigations. These cancer institutes were and are today of two kinds: They are either laboratories in which experimental studies on malignant tumors in plants or animals are studied without regard to the human patient, or they are hospitals to which only hopeless, far advanced cancer patients are admitted, while the patients in a more hopeful earlier stage of the disease are scattered throughout the general and special hospitals. There is comparatively little coordination between the work of the two types of cancer institutes on one hand and the cancer hospital and the general surgical hospital on the other.

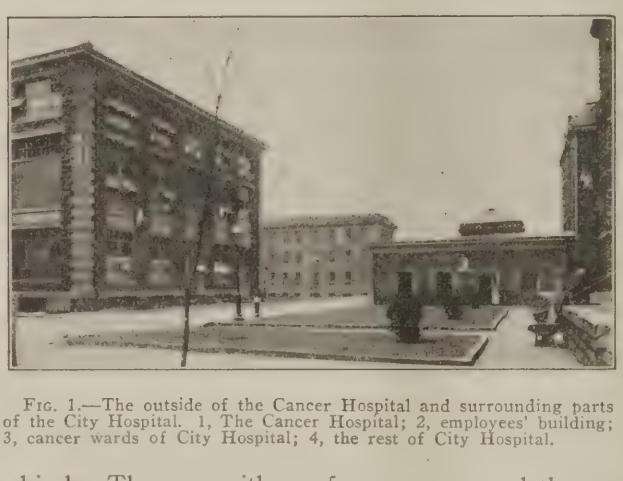


FIG. 1.—The outside of the Cancer Hospital and surrounding parts of the City Hospital. 1, The Cancer Hospital; 2, employees' building; 3, cancer wards of City Hospital; 4, the rest of City Hospital.

For a number of years I have done cancer research in the animal laboratories of the Cancer Research Fund of Columbia University and the Cancer Division of the Montefiore Hospital, but my attempts to coordinate the work of the two institutions have failed.

Mr. Bird S. Coler, the Commissioner of the Department of Public Welfare of the City of New York, who for many years has taken a great interest in the cancer problem from its humanitarian and public welfare aspects, came to the conclusion some years ago that a great municipality such as New York, with six thousand people dying of cancer in a year, must make better provisions for the care of the cancer patients and of the general cancer problem. He also perceived at the outset that the multiplication of effort of the cancer workers and the scattering of the various types of cancer patients into different hospitals retarded the progress in all fields of cancer research.

To obviate these shortcomings Mr. Coler decided not to open an old type cancer hospital or a set of laboratories for cancer research but established the New York City Cancer Institute which is organized on such broad lines that it can take care of all types of cancer patients and is at the same time in a position to conduct every line of cancer research.

THE RESOURCES AND ORGANIZATION OF THE INSTITUTE

The Department of Public Welfare is in charge of the following municipal hospitals: The Metropolitan, City, Central and Neurological Hospitals on Welfare Island, Kings County, Greenpoint, Cumberland and Coney Island Hospitals in Brooklyn, and Sea View Hospital on Staten Island. Their total capacity is nearly ten thousand beds. All these hospitals, as well as many semiprivate hospitals, hitherto took care of the poor of New York City suffering from cancer, and the expenses were charged to the Department of Public Welfare. These patients are now being cared for by the New York City Cancer Institute.

Thus it is clear that the amount of money which the municipality spends on its cancer patients is greater than that devoted by private philanthropy to the same purpose.

The foremost object of the institute is to diagnose, treat and take care of all the poor of New York suffering from cancer. It is divided into three separate units in the following manner:

Cancer patients who present themselves for diagnosis, care and treatment may be roughly divided into three classes.

Class A.—These patients are found upon examination either not to suffer from cancer at all or the disease is in such an early stage that they can be taken care of in the outdoor division or do not require anything but a few days of hospitalization.

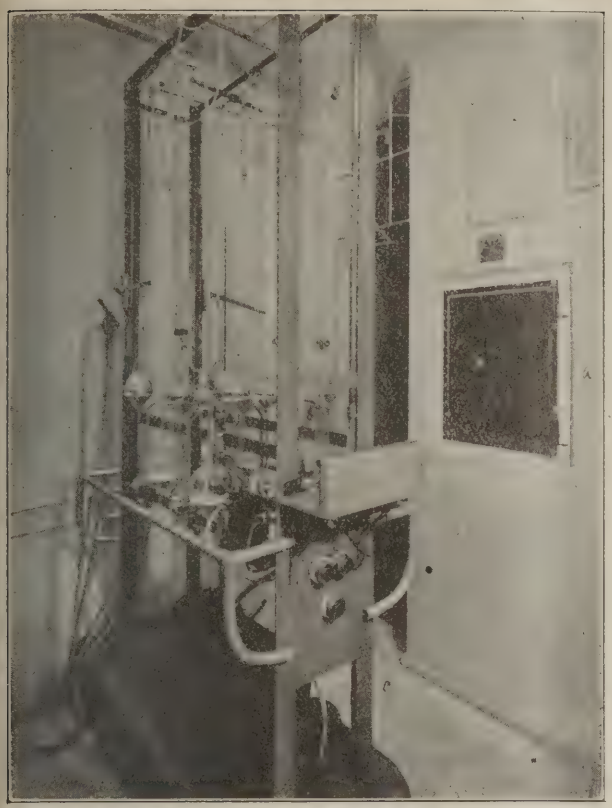


FIG. 2.—A part of the radium laboratories. A, A safe place in a vault which contains the radium in solution. B, Glass tube which connects the radium solution in the safe with the apparatus for pumping and purifying the radium emanation. C, Electric pump used for obtaining vacuum in the glass tubes and glass capillaries.

Class B.—In this class the patients are more seriously ill than those in Class A. They are amenable to treatment but may require several weeks of hospital care.

Class C.—Patients in this class are in a far advanced stage of the disease and cannot obtain more than palliation of the disease and relief of symptoms.

For each group of patients a separate building is used so that in the more severe cases the patients do not produce a depressing effect upon those in a milder state of the disease, and also because, as will be seen later, the three classes of cases present different problems for their care.

The institute is a completely independent medical unit within the Department of Public Welfare. It is aided, however, in its scientific work by all the hospitals of the department, it is affiliated closely with the hospitals on Welfare Island, and particularly with the City Hospital.

Commissioner Coler, of the Department of Public Welfare, gives a great deal of his personal attention to the development and progress of the work of the institute and is assisted in the actual management by Dr. John F. FitzGerald, general medical superintendent of the Department of Public Welfare, Dr. Walter H. Conley, acting general medical superintendent of the Department of Public Welfare, and Dr. Charles B. Bacon, medical superintendent of the City Hospital.

The scientific work is done by the medical director who, with the aid of a staff of associates and assistants, takes care of the surgical, medical and research activities of the institute. All the members of the medical boards of the hospitals of the Department of Public Welfare are consultants to the institute and may be called upon by the medical director to assist in the scientific work.

CANCER CLINIC: CLASS A PATIENTS

This building, situated at 124 East Fifty-ninth Street, Manhattan, is in the most accessible spot from all boroughs of New York City. It is equipped both as a clinic for group diagnosis and for cancer therapy. It is a five story fireproof structure measuring twenty-five by ninety-eight feet. In the basement there is a double high voltage x ray machine for therapy, with complete radiographic and photographic laboratories, and record rooms. On the main floor there is a large general waiting room, with examination rooms for all the specialties, and radium therapy rooms. The third floor contains one male and one female ward with six beds each. The fourth floor contains an operating room, anesthesia and sterilizing rooms, pathological and chemical laboratories for routine work and a conference room. The fifth floor contains kitchen, dining room and service rooms. On the roof is a small animal house for experimental work.

As stated above, in this clinic building diagnosis is made and treatment given, both surgical and radiotherapeutic, provided the patient does not require prolonged hospitalization. This building also serves as a clearing house to which all the cancer patients of the different hospitals are referred.

CANCER HOSPITAL: CLASS B PATIENTS

This building is situated on Welfare Island in close proximity to the City Hospital. To this building patients are transferred who may need a radical surgical operation in conjunction with radium and x ray therapy and who, while they may need prolonged hospitalization, expect to leave the hospital clinically improved or cured.

This building is a three story fireproof structure measuring seventy by ninety feet. The first floor contains record rooms, offices of the social workers,

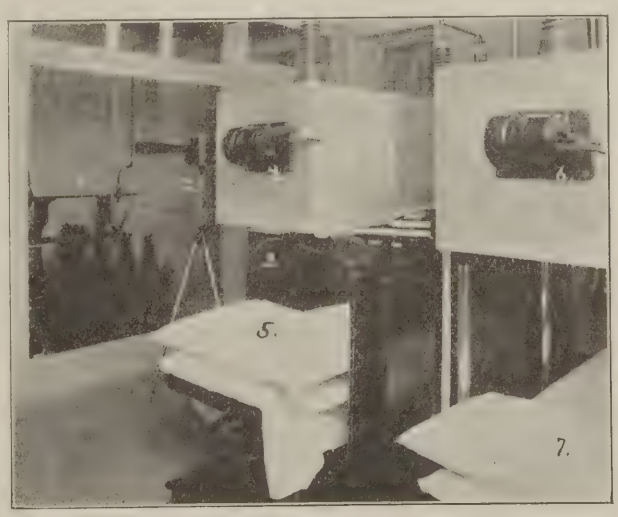


FIG. 3.—A part of the high voltage x ray therapy room. 1, x ray apparatus behind a glass wall; 2, a fine measuring apparatus used for measuring rays coming out from the x ray tube; 3, another measuring apparatus which shows the quantity of rays while the patient is under treatment; 4, a complete lead protected box containing an x ray tube; 5, an adjustable table for placing the patient under treatment; 6, another box containing the second x ray tube, the partition between the two tables is lead protected so as to protect one patient from another.

and a lecture room holding one hundred people. The second floor consists of one male and one female ward of fifteen beds each. On the third floor are a surgical operating room, a sterilizing room, an anesthesia room, rooms for two double high voltage x ray therapy machines and research laboratories in biophysics of radium and x rays.

CANCER WARDS AT CITY HOSPITAL: CLASS C PATIENTS

Unfortunately at present and for some time to come, by far the greatest number of cancer patients who present themselves for treatment are in an advanced stage of the disease, and at the most only palliation and temporary relief of their symptoms can be expected. For these Class C patients two hundred beds are allotted in the wards of the City Hospital. However, these patients may also need major though palliative surgery, radium and x ray treatment. They are being treated at the Cancer Hospital building and then returned to the wards of the City Hospital.

CANCER RESEARCH

I have pursued cancer research in its every phase for over a quarter of a century, on animals and plants and on humans. My opinion to date is that the line of greatest promise is clinical investigation of characteristics, cause and behavior of the different types of cancer and the best methods of therapy for the individual conditions. When animal experimentation is done it should be used only as an adjunct to clinical research. This opinion as regards cancer research is shared by the majority of the investigators of the cancer problem today.

The institute is equipped with laboratories for animal research and for research in pure physics of radioactivity, but the investigations being planned and conducted are applied to clinical problems of cancer therapy.

EDUCATION AND SOCIAL SERVICE WORK

That the only salvation for the cancer patient lies in the early recognition and the early treatment of the disease needs no argument. I consider the campaign of education, both of the profession and the lay public, the most important function of the institute. The mere fact of the existence of the New York City Cancer Institute will help educate the people of this city to the necessity of looking out for the appearance of cancer symptoms. But besides this the institute puts itself into close touch with the Department of Health and the Society for the Control of Cancer in the matter of public education. For the medical profession it conducts frequent clinical conferences and beginning May next it will establish postgraduate courses in diagnosis and treatment of cancer.

The social service work of the institute is so planned that each patient after being discharged from the clinic or hospital will be followed up for years so that a recurrence of the disease may be taken care of before the symptoms could be noticed by the patient.

THE NEED OF MUNICIPAL CANCER INSTITUTES

For the present, the hope and salvation of the cancer patient, particularly the ignorant and the poor, lie in the establishment of large State and municipal institutions for the care and treatment of cancer. These institutes by their mere existence, as stated above, will serve to educate the people, to instill in them confidence in the scientific medical methods of treatment, and to wean them from quackery of all kinds. Such institutions will become, within their own communities, the centres for actual education of both the profession and the public.

It is my firm conviction that Commissioner Coler struck the keynote of the situation in the whole cancer problem when he organized the Cancer Institute within the Department of Public Welfare. Not only will the institute care for all the poor of New York suffering from cancer and will serve as a centre for the education of the people, but one of its main functions will be to train the younger generation of medical men to become experts in the care and treatment of cancer patients and in the cancer problem generally.

Commissioner Coler anticipates that other great municipalities in this country will follow the example set by him and establish similar institutions. The heads of the Health and Welfare Departments of the communties in which such institutes are established and the scientific workers of such institutes should then combine into one large national organization for the Study and Control of Cancer. Such an organization would then be well equipped to approach the solution of the world wide Cancer Problem.

119 West Seventy-first Street.

Foreign Correspondence.

PARIS LETTER

(*From our own correspondent*)

Paris, *May* 14, 1924.

MEDICAL MEN AND SPORT

Sport is occupying a prominent place in the mind of Parisians just now, for the Olympic Games not only are set aside for the French capital, but have actually begun. And during the last few weeks the medical profession has been drawn into the fray. Not that medical men are participating in track and field, but their opinion on sports is being sought on every hand. As a matter of fact, the older school of French practitioner is inclined to ignore sports altogether. Military exercises and Swedish gymnastics are about as far as he has got. Very few have taken to golf, some frequent a *salle d'armes* regularly for a bout with foils, but the great majority pays not the slightest attention to games or sports. And although the French hail Dr. Gosset as a sportsman, his American *confrères* will fail to see how that comes about. Dr. Gosset is chief surgeon of the Salpêtrière and professor at the Paris Faculty of Medicine. Of late he has established a racing stable and his colt Marcellus recently won the Grand Prix du Printemps at Auteuil—hence numerous allusions to his being a sporting surgeon.

ATHLETICS AND THE HEART

Dr. Gosset has rested content with the victory of his colt and has not expressed any opinion on the value or otherwise of athletics. Americans will won-

der why the subject should be discussed at all at this stage, but they should remember that the development of athletics is of recent date in France. The war gave them a very great impetus; before 1914 they were still restricted to the leisured class. Consequently, in this country, it is not considered irrelevant to debate seriously and medically the question: Are sports good or bad? Furthermore, some doctors have come forward to decry athletics. Whereupon Dr. Bellin du Coteau has treated of the question before the Academy of Medicine. He is fully qualified to do so, for not only does he rank high in his profession, but he has held the French championship for 400 mètres flat, has represented his country in previous Olympic Games and has captained the All-France field hockey team. There is no need to dwell long on his paper, as American doctors are familiar with the pros and cons and have made up their minds long ago. Suffice it to say that Dr. Bellin du Coteau showed to the satisfaction of his audience that if hypertrophy of the heart is to be found among athletes, such hypertrophy corresponds merely with that of the biceps, for example, and has no more importance pathologically than the latter. Of course, he assumed that training is carried out in a scientifically progressive manner.

THE GROWTH OF HAIR

Does shaving hasten the growth of hair? This scarcely seems to be a serious medical subject, yet the *Annales de Dermatologie* think it important enough to devote an article thereto. Its purpose, it is true, is to show the fallacy of the popular belief and to dismiss it for all time as of no further interest. With this object in view, Dr. Bulliard recently concluded a series of carefully conducted experiments, during which he proceeded to take accurate measurements, the subject being one of his assistants who, for a period of seven months, appeared in society wearing a black silk skull cap. This was quite essential, seeing that one half of his cranium, longitudinally, was shaved, at regular intervals at first and afterwards at irregular, Dr. Bulliard the while keeping busy with his micrometer. With the data thus obtained graphs were prepared for each side of the skull. The outcome is that although immediately after shaving the pilous growth is stimulated, this effect is of short duration. The final result is identical for the two halves of the head, and there is no appreciable difference, on final analysis, between the length, thickness and density of the hair after a period of months.

FILMING INTERNAL ORGANS

Lomon and Comandon, well known in French scientific circles, have displayed before the Academy of Medicine an invention consisting of an apparatus by which the internal organs of a living person can be cinematographed and thus studied in film projections. The apparatus is not yet developed sufficiently to be placed on the market, but the results up to date are satisfactory and there remain only minor details to be adjusted. The mechanism was evolved in the physical laboratory of the Faculty of Medicine in Paris, a cinematographic camera being adapted for use in conjunction with x rays. The success was such that pictures of the human heart beating were taken at the rate of seventeen images a second. The movements of the lungs and diaphragm were photographed also. The invention, of course, is intended principally to facilitate diagnosis.

VALUE OF WORKS BY AMERICAN SCIENTISTS

Of recent months, it has been rare to peruse a French medical review or even the scientific columns of a daily newspaper without coming across flattering references to works by American physicians or surgeons. At present, for instance, no article on vitamines fails to mention Casimir Funk's volumes published in Baltimore. *The Vitamines* is conceded to be an indispensable work for all those studying the subject, one reviewer remarking that it is "the one book which sets forth all that is known in this connection, and at the same time indicates all the research work that remains to be done." The late Jacques Loeb's *Theory of Colloidal Behavior* is also much talked of, with frank admiration for the genius of the author. French scientists regret that the fiscal situation of the country, necessitating as it does increased customs duties, precludes at present the publication here at reasonable prices of works of the greatest importance. Indeed, the cost of printing has become so high that candidates for the doctorate have been authorized to present theses either in manuscript or manifolded by some mechanical process other than printing.

LONDON LETTER

(From our own correspondent)

London, *May 6, 1924.*

TROPICAL HEALTH SECTION OF THE EMPIRE EXHIBITION

At the Empire Exhibition now being held at Wembley, there is a tropical health department which is intended to give a graphic representation of the various diseases and to explain how they are caused and how they may be prevented. The disease section deals with twenty-seven diseases, and one portion is given over to those which are spread by biting insects. Photographs, pictures, models and specimens are employed to describe each disease, and a brief history and the existing available means for fighting it are also given. Among these diseases are included such maladies as malaria and yellow fever. Another group includes those due to intestinal infections, such as typhoid fever. Food deficiency diseases are represented by scurvy and beriberi. A good deal of space is devoted to skin diseases, yaws and leprosy. The third section deals with hygiene and the fourth with plant diseases. Excellent photographs portray the various stages of sleeping sickness, wax models of the tsetse fly in its developmental stages together with photographs of its haunts and breeding places. The point is strongly emphasized that well organized campaigns against the tsetse fly will stamp out the disease, as witness what has been done in the Isle of Principe. The malaria exhibit is unique in its completeness; models and actual specimens show the stages and processes of breeding and there are models of the parasite in the human and mosquito stages. The manner in which preventive measures are carried out are well demonstrated by the aid of illuminated devices. Yellow

fever is dealt with briefly, a model of the "tiger mosquito," the host of the disease, is shown, and a pictorial account is given of the campaign in Guayaquil recently carried out successfully against this mosquito. The relation of dengue fever to mosquitos is pointed out. A pictorial description is given of the life history of the guinea worm and the various spirochetes causing relapsing fever, syphilis and other diseases are depicted and the manner in which they are propagated is explained. There are photographs and paintings of plague patients and pathological specimens illustrating three varieties of this disease. There are good exhibits of Rocky Mountain fever and Oriental sore and it is shown how recent advances in treatment, as well as in prevention, have made the outlook for these diseases much more hopeful. Dysentery, typhoid and paratyphoid fevers, cholera, hookworm disease and bilharziasis are represented by specimens and descriptions. Scurvy, beriberi, pellagra, and tropical skin diseases, including leprosy, are demonstrated. The relation of scurvy to diet is emphasized by an exhibition of samples on models of various antiscorbutic foodstuffs.

THE AMERICAN HOSPITAL AT HAMPSTEAD

The American Hospital has been opened provisionally in a nursing home at Hampstead, a London suburb, by the American Ambassador. The money in hand will enable the work to be carried on until experience teaches how many beds are needed by the American colony in London. These funds are derived, at least in part, from the unspent balance still in the hands of the Care Committee for Soldiers and Sailors, which was formally handed over to the Provisional Committee of the hospital. A bronze slab accompanied the check to commemorate the work of the Care Committee during the war. All the American organizations in London have cooperated to make the new institution possible, and if the requirements show that a more ambitious hospital is needed, the American colony will be asked to raise enough money to purchase or build such a hospital. More hospital beds are always needed, and London now falls into line with other capitals in having a hospital for its American colony.

GIFTS FOR MEDICAL RESEARCH

The rich men of this country have not compared favorably with those of America in their generosity to medical science. Recently, however, there have been some large gifts to Cambridge University to further medical research, although it must be said that the largest donation for this purpose is from Americans. Mr. and Mrs. P. A. Moltens have added to the previous gifts to Cambridge University by presenting £5,000 to the Moltens Institute of Parasitology to clear off a certain deficit incurred on the building and equipment of the laboratory. Sir Horace and Lady Darwin and Mrs. G. F. Pinsent have given £5,000 to the university to endow research into any problems which bear on mental defects, diseases, or disorders. It is suggested that a Pinsent-Darwin Studentship in Mental Pathology be established in memory of their sons who died in the war. This studentship will be open to both men and women. But the largest gift that the university has received is from the Trustees of the Rockefeller Foundation, who have offered to provide £100,000 for a building for the School of Pathology and £33,000 towards its endowment, provided the university can obtain the remaining £33,000 which is considered necessary for the completion of the endowment. Not long ago the Rockefeller Foundation gave a large sum to the University of London. More recently it gave £75,000 to the University of Oxford for a School of Biochemistry.

ANNUAL MEETING OF THE BRITISH MEDICAL ASSOCIATION

The provisional program of the ninety-second annual meeting of the British Medical Association to be held at Bradford from July 22d to 25th has been issued. The incoming president will deliver his address on July 22d. The annual representative meeting will begin on July 18th, and be continued on the three following week days. The annual dinner of the association will take place on July 24th. The conferences of secretaries will be held on July 23d. A popular lecture on the sun cure will be delivered by Sir Henry Gauvarn, M.D., on July 25th. July 26th, the last day of the meeting, will be given up to excursions to places of interest in the neighborhood.

ANNUAL CONFERENCE ON TUBERCULOSIS

The tenth annual conference on tuberculosis of the National Association for the Prevention of Tuberculosis will be held in London on July 3d and 4th. The main subject under consideration will be the part played by training colonies in the treatment of tuberculosis, and the conference will take the form of a practical demonstration of the work carried out at the training colony founded and maintained by the national association.

LABOR VIEW OF THE HOSPITAL SITUATION

The following is a summary of the labor view of the hospital situation in Great Britain: 1. The labor movement recognizing the importance of health to individual and national well being, considers that all hospitals, both special and general, together with allied institutions, should be so organized under one authority as to form the foundation on which a complete hospital system for the nation with sufficient accommodation to deal with all cases requiring institutional treatment can be built. 2. It would establish treatment centres in outlying districts, local or cottage hospitals in the smaller towns, one or more county hospitals conveniently situated in each public health area, and national hospitals in London, Edinburgh and other university towns. 3. It would organize intimate cooperation between all the hospitals in each public health area and also between them and the nearest national hospital. It would make arrangements for easy and rapid transference of patients from one hospital to another according to the nature and requirements of the case. 4. It would organize intimate cooperation between the medical staffs of the various hospitals and also between them and general practitioners making the participation of the latter an essential feature of the hospital scheme. 5.It would provide the health authorities with sufficient beds under their own control to deal with all patients for whom they have already undertaken the responsibility. (Patients suffering from tuberculosis or venereal diseases; children from

the school clinics; mothers and infants from the maternity and child welfare centres; and adults under the National Health Insurance scheme.) 6. It would introduce the necessary legislation for the transference of the Poor Law infirmaries from the guardians of the poor to the local health authorities, thus placing at their disposal many beds now vacant. It would remodel these infirmaries where necessary, equipping and conducting them in every way on the lines of the best existing general hospitals.

GONORRHEA IN WOMEN AND CHILDREN

William Heinemann, Ltd., London, have just published a handy and cheap little book on gonorrhea in women and children, being a series of lectures on this subject given by J. Johnston Abraham, C.B.E., D.S.O., M.A., M.D. (Dub.), F.R.C.S. (Eng.), surgeon the London Lock Hospital. It presents the subject in a condensed form but contains the essential points.

VIENNA LETTER

(From our own correspondent)

VIENNA, *April* 1, 1924.

THE FASHION OF DEATH MASKS

A Vienna sculptor, who had very little to do, inserted an advertisement in a leading daily announcing that he prepared death masks—in vito. The novelty created a real craze, resulting in the fact that the artist, who could not make his living from true art, is now so busy with making death masks that he employs twelve men who do nothing else. Society ladies are besieging his studio and compete with each other in having death masks made first. They find it interesting to place their death masks beside those of Beethoven and Nietzsche. Nominally, the technic of making the mask consists in smearing the face with a thick layer of a kind of grease, to save the skin, the eyebrows, the eyelashes and the lips from injury when the plaster cast is removed. A glass tube is placed in the mouth to enable them to breathe. They put wadding in their ears and a silk ribbon is tied on the forehead and the cheeks, which serve to raise the hard plaster that covers the face. Although the whole sitting does not last longer than fifteen minutes, they suffer from unpleasant sensations, difficult breathing, palpitation, and fright. The sculptor has received an invitation to visit Paris, where society ladies are anxiously awaiting him.

SEXUAL SCANDALS IN VIENNA

In the Austrian metropolis the main topic of conversation is the scandalous orgies that it is said took place in the house of a society woman in the villa quarter of Vienna. The charge against her is that she had allowed men to visit her house, where they had rendezvouz with small girls and had committed with them all possible perversities from masochism to sadism, from hypnosis to homosexualism. Among the visitors to this vile place there were gentlemen in high positions and of very high social standing. The Vienna press has presented the details of this scandal in a very objectionable way, which offends public morals. They write openly that undeveloped girls were enticed into this house. Men went there and tormented the bodies of these undeveloped children with lashes, sticks, whips, etc., in order to satisfy their morbid sexual feelings. In one daily paper of eight pages, five pages were taken up with the details of this scandal. Large headlines appeared with such titles as "Intimate details. The confession of the servant girl about the sexual life of her mistress. The most discreet details revealed," and the subject is enlarged upon in a score of columns. After such publications it was only natural that the police intervened. The owner of the house simulated insanity in order to evade the trial, but in vain. The trial revealed still more compromising details than were ventilated in the daily press. A bank director had enticed young boys into his house and had persuaded them to have intercourse one with the other, while he himself, dressed in the mask of a dog, ran around them barking. There was no end to the scandalous and nefarious bestialities, which, thanks to the alertness of the detectives all came to light. It is quite certain that the strictest possible punishments will be meted out to these criminals. Some papers have attacked even the judges, saying that they seem to dig out the minutest details of the scandalous affairs with a seeming delight. They have scrutinized such things, the paper says, that have nothing to do with the merits of the case. They always asked the accused women what drives them to make love to other women? The answer in general is that they were led by curiosity towards the sexual aberrations rather than by objectively weighing the crimes.

The medical journals are searching for the cause of this scandal. They uniformly state that "The community is sick; its press is sick, as well as its literature." They argue that "after the war the city collapsed, and civilian morals were buried with it."

AUSTRIA AND THE FOREIGN MEDICAL DIPLOMATS

On account of numerous inquiries at the Ministry of International Affairs as to the necessary formalities for a foreigner to practise medicine in Austria, the minister has reached a decision. Only diplomas issued by the Austrian universities and foreign diplomas which are granted by passing the necessary examinations before an Austrian university entitle one to practice medicine in Austria. Foreign diplomas which enable one to practice only a certain branch of the medical sciences cannot be accepted. According to the decision of the minister in private life and social intercourse the foreign doctors may use their doctor title, but this does not entitle them, from a legal point of view, to use their title in court, or in the commercial life as long as their diploma is officially accepted and recognized.

SMALLPOX BLINDNESS

Lately it has been intimated that compulsory vaccination should in some measure be mitigated. One of the chief advocates of this erroneous idea is Grottjahn, who appears to be a great apostle of the liberty of man. Contrary to this, Professor Hess has compiled the statistics of the blind people who contracted blindness in consequence of smallpox. From these statistics it is clearly seen that in those lands where there is no compulsory vaccination, the number of blind persons is enormously greater in comparison to states where there is compulsory vaccination in the first year of life.

Book Reviews

UROLOGY

Modern Urology. In original contributions by American Authors Edited by HUGH CABOT, M.D., C.M.G., F.A.C.S. In Two Volumes. Volume I. General Considerations, Diseases of Penis and Urethra, Diseases of Scrotum and Testicle, Diseases of Prostate and Seminal Vesicles. Illustrated with 398 engravings and 11 plates. Volume II. Diseases of the Bladder, Diseases of the Ureter, Diseases of the Kidney. Illustrated with 288 engravings and 8 plates. Second Edition, thoroughly revised. Philadelphia and New York: Lea & Febiger, 1924. Volume I. Pp. xi-828; Volume II. Pp. viii-744.

Modern Urology, in two volumes, is all that its name implies. In reviewing a new book in medicine, the reviewer at once usually sets out to ascertain how up to date the book is. He looks for phases of the subject, as measured by modern standards, that may be for some reason or another left out. As to the work in question, it is extremely gratifying to note that it is difficult to find any such sins of omission, or at least any of great importance.

There is little in the way of destructive criticism to be said. In the chapter on tumors of the testicle, it would seem the author lays rather too much stress on the radical removal of the retroperitoneal iliac and spermatic lymph nodes. This is a procedure of some magnitude, and in the light of the immense amount of good that is accomplished nowadays by radium and deep x ray therapy, such a radical operation is perhaps unwarranted. The author mentions the employment of these measures in connection with the operation and admits their value for glands that may be overlooked in the operation. We think that if radium, for example, is capable of suppressing the advance of malignancy in a few glands that may have been missed, it is reasonable to suppose that it is equally capable of controlling all glands in this region that represent potential foci of malignancy. In this chapter, the author also advocates puncture drainage of the vaginalis. This is done to reduce the amount of hydrocele fluid surrounding a possible malignant growth of the testicle, thereby better enabling one to palpate the latter for diagnostic purposes. Despite the greatest care, it would seem a needle would occasionally strike the growth itself and so disseminate malignant cells.

While the chapter on kidney tumors is excellent, there are too few cuts illustrative of diagnosis by pyelography. The author's description of the types of kidney pelves encountered in tumors, as shown by pyelograms, is admirable, but we fear it would be difficult for the uninitiated, without illustrations, to draw the proper conclusions from many of the bizarre shaped pelves that result from tumors.

The outstanding features of excellence in this work are far too numerous to mention in a brief review. Notable among them, however, is the portion on tumors of the testicle, which deals with their classification and pathology. The latter phase of testicular neoplasms, usually so confusing, is presented in an exceptionally clear and straightforward manner. In the chapter on prostatic obstruction, much stress is laid on gradual bladder decompression and a very clear description of a method of doing this is given. A feature, which is all too often slighted in many urological books, is the tabetic bladder. Here it gets the prominence it deserves. The cystoscopic picture is very graphically and accurately drawn. The chapters on tumors of the bladder and prostate, aside from their interest in general, are noteworthy in showing the strides made by radium therapy. This is particularly true of carcinomata of the bladder.

Stricture of the ureter is handled by the pioneer in this line of work. His work is mostly on women and hence facilitated by the use of the Kelly cystoscope but he points out the fact that with the modern Nitze type of instrument, there is no excuse for not doing just as much investigation along this line as in the male. The chapter on tests of renal function is unusually complete, and contains a description of simplified practical methods of doing blood chemistry. The latter has come into its own in recent years in urology, but proper descriptive methods are lacking in most genitourinary works.

In general, these two volumes are admirably arranged. Diseases of the bladder, diseases of the ureter and diseases of the kidney represent the three divisions of volume No. II, while generalities and all other urological conditions are grouped together in volume No. I. The bibliography in each chapter is very comprehensive and very conveniently arranged at the end of the chapter.

VENEREAL DISEASES

Venereal Disease, Its Prevention, Symptoms, and Treatment. By HUGH WANSEY BAYLY, M.C., Hon. Sec. Society for the Prevention of Venereal Disease. Second Edition, with Fifty-five Illustrations. London: J. & A. Churchill; New York: MacMillan Company, 1924. Pp. 170.

This compact volume deals with the salient points with regard to the prevention, symptoms, and treatment of venereal disease. This is a second edition carefully revised in such a way that, although smaller than the former edition, it contains the main facts in connection with modern treatment, special stress being laid upon the preventive aspect. The author who is the honorary secretary of the British Society for the Prevention of Venereal Disease, is not only an authority on the subject, but as secretary of the above society, has been chiefly responsible perhaps for insistently emphasizing the truth that in the treatment of venereal disease the old adage, prevention is better than cure, applies with especial force. Moreover, this society advocates an effective means of prevention and for some years past has been endeavoring to educate the public and to bring the medical profession to its way of thinking. While there is still difference of opinion among experts on venereal disease as to methods of prevention, a great deal of the prejudice which has existed against immediate self disinfection, one of the weapons advocated by the society, appears to be waning in Great Britain. Of course it is felt and acknowledged by all, that if success is to be reached, the profession must be united in any campaign against so insidious and devastating a plague as venereal disease, which, after all, is as much of a social as a medical problem.

Therefore an educative crusade conducted on sane and rational lines is essential. All this is explained in the preface by the author, who also enters into certain matters in connection with the policy of the society which arose during Dr. Bayly's candidature for Parliament for one of the Plymouth Divisions against Lady Astor. The preface should be read carefully.

The book itself is an admirably arranged, judiciously condensed manual of venereal disease. All that is really important is included. Dr. Bayly insists that venereal disease is the most easily controlled of all the chronic infections, provided that it is grappled with promptly and effectively. He deplores the policy of refusing to face the problem boldly, a policy which he and many others believe has led to the wide dissemination of venereal infection. As said before, the author suggests ways and means for stemming this spread, and consequently the book is of interest to those concerned in the biggest international medical and social question of all time.

CIRCULATORY DISTURBANCES OF THE EXTREMITIES

The Circulatory Disturbances of the Extremities. Including Gangrene, Vasomotor and Trophic Disorders. By Leo Buerger, M.A., M.D. With 188 illustrations. Philadelphia and London: W. B. Saunders Company, 1924. Pp. 628.

The circulatory disturbances of the extremities form a very unsatisfactory chapter in clinical medicine. Encountered with great frequency by the general practitioner, internist and surgeon, they nevertheless offer many difficulties in diagnosis, and demand mature judgment in their treatment. It is fortunate, therefore, that Dr. Buerger, who has had such a rich experience in the study of disease, and who has made some fundamental contributions to our knowledge in this domain of medicine, has found time to prepare this monograph. There is no other book that covers the field exhaustively.

The first hundred pages of the book are devoted to an exposition of the anatomy, physiology and pathological physiology of the circulation of the extremities. Considerable attention is devoted to the vasomotor nervous mechanism. There follow several chapters on diagnostic symptoms. Intermittent claudication is discussed at length. A number of chapters are devoted to the various types of gangrene. One hundred and seventy pages are devoted to a thorough description of the clinical and pathological picture of thromboangiitis obliterans. This, as is to be expected, is the best section of the book, although the chapters on arteriosclerosis of the arteries of the extremities are excellent.

The rest of the volume is devoted to a presentation of a great variety of circulatory disturbances of the extremities, such as Raynaud's disease, erythromelalgia, and the vasomotor neuroses. Finally, there is a brief review of the results obtained by the newer methods of capillary microscopy.

The illustrations, of which there are one hundred and ninety-two, are well selected and well reproduced. The bibliography, which is quite complete, will be found valuable by the reader who wishes to consult the original literature. Many illustrative case histories are presented.

It is unfortunate that the author has subdivided the book into one hundred and eight chapters, many of which are no more than one page long. A rearrangement of the material would improve the book. Similarly, the style, which is often of loose construction, with very long sentences, disturbs the fastidious reader.

There is a distinct need in American literature for more monographs of this sort, which are not mere compilations of the literature, but which represent the fruits of the author's wide experience in a special field, and in which the subject matter is handled in a comprehensive and critical manner.

LOCAL ANESTHESIA

Local Anesthesia. Its Scientific Basis and Practical Use. By Prof. Dr. H. Braun, Zwickau, Germany. Revised sixth edition. Translated and edited by Malcolm L. Harris, M.D. With 231 illustrations in black and colors. Philadelphia and New York: Lea & Febiger, 1924. Pp. 411.

Braun's *Local Anesthesia* has been the standard German work on this subject since the appearance of the first edition in 1905. The third edition was translated into English in 1914 by Dr. P. Shields, of Chicago. As stated in the introduction, the sixth edition contains so much new matter and so much of the old has been rewritten in the light of more extended experience that the need of an entirely new translation was evident. In the translation Dr. Harris has adhered strictly to the text except where his notes clearly indicate to the contrary.

Dr. Braun confines himself exclusively to local anesthesia. His clinical experience has been extensive and his book is written in a practical way without minimizing the importance of a thorough knowledge of the scientific basis of the subject. The first ten chapters are devoted to the history, development and pharmacology of the modern local anesthetic agents. He gives the various methods of using the local anesthetic drugs and the general technic of infiltration, conduction, lumbar and sacral anesthesia. He outlines more clearly the indications, contraindications and limitations of local anesthesia. In the last six chapters he considers regionally all portions of the body and the practical use of local anesthesia in the special branches such as ophthalmology, otology, rhinology, gynecology and urology. Many operations are described with the aid of illustrations and actual photographs taken during the operations in order to demonstrate the possibilities of local anesthesia and the value of a better understanding of the technic. Surgeons who employ local anesthesia should not fail to study this work.

DIETETICS

Diet for Children (and Adults). By Lulu Hunt Peters, A.B., M.D. New York: Dodd Mead & Co., 1924. Pp. 313.

Readers could hardly fail to be benefited by studying this book of slightly more than three hundred pages. Information contained within its pages is gathered from the writings of pediatrists. It is up to date in respect to vitamines, minerals, and balance in diet. It is not difficult for the layman to understand. The menus and receipes are plentiful. The first half of the book is devoted to the normal infant and child and as the author says "the diets given for

the child are just as good for the adult." This includes part one and part two. Part three discusses diet in disease and includes some advice regarding bad habits. Part four relates to food poisonings. Part five consists of drawings, accompanied by rhymes for the amusement and instruction of children on the subject of diet, with the Kalorie Kids.

HEREDITY AND EUGENICS

Handbuch der biologischen Arbeitsmethoden. Unter Mitarbeit von 500 bedeutenden Fachmännern, herausgegeben von Geh. Med.-Rat. PROF. DR. EMIL ABDERHALDEN Direktor des Physiologischen Institutes der Universität Halle a. d. Saale. Abt. IX, Methoden zur Erforschung der Leistungen des tierischen Organismus, Teil 3, Heft 1. Methoden der Vererbungsforschung. Berlin und Wein: Urban & Schwarzenberg, 1923. Pp. 210.

This is a highly technical study of the subject of heredity. Julius Bauer discusses the methods of studying the constitution of individuals. Paul Kammerer dilates upon the methods of studying the heredity of acquired properties and those of studying experimental variations. Valentin Haecker is assigned the subject of the methods of studying heredity in man. Robert Sommer deals with the subject of the methods used in studying the hereditary characteristics of families. This series of articles is of interest only to those engaged in investigating the subject of heredity and eugenics.

THE HUMANITIES

Humanidades. Publicacion de la Facultad de Humanidades y Ciencias de la Educacion. Dirigida por RICARDO LEVENE.

This is a publication of the National University of La Plata, Argentine Republic, from the Faculty of Liberal Arts and Science of Education. There are articles on The Argentine Writer and Castilian Grammar, on World Peace, on Liberalism and Humanism in the Problems of the Present Day, on Notes on the Ethical Problem in the Theories of Aristotle, and like subjects.

The present volume is the sixth of a series and bears the date 1923, but one does not learn from its contents whether or not it is an annual publication. At the beginning of the text there is set forth a list of the officers of the university as well as the names of the Faculty under whose auspices the publication is prepared and issued.

Its interest necessarily must be primarily for the educator and the scholar rather than for the professional man.

"FAR AWAY AND LONG AGO"

The Bridal Wreath. By SIGRID UNDSET. Translated from the Norwegian by C. Archer and J. S. Scott. New York: Alfred A. Knopf, 1923.

To give new warmth and life to characters dead since the fourteenth century requires more than ordinary skill. In *The Bridal Wreath,* Sigrid Undset has unfolded a simpler tale than in her *Jenny,* but just as powerful and even more highly colored. We are reminded that after all human nature does not change much. And at the same time there is no sense of modern intrusion. Kristin Lavransdatter grows from child to woman according to the pattern of unending time. The fundamentals are still the same. Only in the rich detail of her life does it differ from one's own. Miss Undset's picture of the "far away and long ago" makes us yearn for the simple life when beautiful things were handwrought; we tend to forget that the beautiful souls of that time were supposedly the work of the churches. Kristin takes her own soul in hand, and thus bridges many centuries.

TOLD BY AN IDIOT

Told by an Idiot. By ROSE MACAULAY. New York: Boni and Liveright, 1924.

There is nothing new under the sun. This theme is iterated and reiterated almost to tiresomeness in Miss Macaulay's latest book. The story is excellent on many counts; as history, as a politicosocioeconomic study, as satire, as workmanship. But—it isn't a story. It is life. Yet one feels a hiatus in the shaping of this life to fictional ends. Even Galsworthy has had better success with the three generation chronicle. Gilbert Cannan still has an excellent one in the making. Thomas Mann in *Buddenbrook* gives us the German classic, and Knut Hamsun speaks for Scandinavia in the two volumes pertaining to Segelfoss. It seems to be an age of chronicles. If only Miss Macaulay had got a little ahead of the tide, or a little behind. As it is, she is slightly eclipsed on her share of the life of man by *The Long Journey.* We wish we could praise the book more highly. After its noisy réclame we had high hopes, and were distinctly disappointed. There are excellent characterizations, good psychology, valuable documentary history on 1870 life and manners. But the heart of it does not beat. One feels the straining for vivacity. It almost lives—and then the infant drama is overlaid by wads of politics!

A MYSTERY TALE

The Shot. By SIBYL CREED. London: Chatts and Windus; New York: Doran Co., 1924.

This book, although essentially a mystery tale, is at the same time somewhat out of the common. Most mystery tales are not well written, that is to say, are not good literature. *The Shot* is an exception, for while the plot is all it should be, the phrasing and language are exceptionally well done. The plot is the thing and the plot is extremely ingenious and holds the reader's attention until its unfolding. As an excellent mystery story is rightly expected to be, the plot is not intricate and confusing, but natural and simple and fits in with the circumstances. The tale is both exciting and homely and is told in a curiously effective manner, a manner which is interesting and attractive. A feature of the book, outside of the plot, is the description of Thames side scenery. These are delicately drawn vignettes of the district of which Miss Creed writes. The author is no less at home in her sketches of character, which are drawn with a sure but discriminating hand. From the viewpoints of plot and literary merit the book is on a high plane.

MARRIAGE

The Marriage Verdict. By FRANK H. SPEARMAN. New York: Charles Scribner's & Son, 1923.

Here is a beautiful lady disastrously married to a ruffian. The war, suffering, and divorce, and finally —*the* man. But our heroine in the interim has become a Catholic! And yet the last pages see the lovers united by the Bishop. How it is done is logically and skillfully unfolded.

Medicoliterary Notes.

Gora is the title of a new novel by Rabindranath Tagore, lately published by the London branch of Macmillan. It is not only an interesting and brilliantly told story, but a revelation and interpretation of the heart and soul of India. The fundamental understanding and harmony that should and does underlie, according to Tagore, the differences of nations and races, of East and West—Mr. Kipling to the contrary—is emphasized in the climax of the novel, the discovery that the Hindu patriot and leader of the extreme pronative political school, is really a man of pure British blood who was adopted at birth by an Indian family and brought up in the traditions of the East.

* * *

The Three Impostors, by Arthur Machen, is a real "thriller" for all who enjoy stories of mystery, black magic and occultism. It is well written, with the exception of one or two violations of good taste in attaining the horrible, and has a delightful undercurrent of humor for those who can find it. H. Rider Haggard has given us recently another Allan Quatermain tale in *Heu-Heu, or the Monster,* which describes a long, wild journey into a forgotten corner of Africa for the purpose of rescuing a beautiful maiden from a tribe of primitive men worshipping a weird devil-ghost.

* * *

A late issue of the *North American Review* contains an amusing article entitled "The Problem of the Darned Fool," which is a statement of a minister's opinion of presentday mental incompetence. The writer, Rev. Mitchell Bronk, lists among signs of this incompetence, Laura Jean Libbey's books, inane "movies," gold brick experts, clairvoyants, crowding on the subway, jazz, and so on ad infinitum. But he suggests no cure!

* * *

A comprehensive and exceedingly well classified *Bibliography of Eugenics,* compiled by Prof. S. J. Holmes, of the department of zoology of the University of California, has recently been issued as volume 25 of the university's *Publications in Zoology.* The titles are listed under thirty-nine subdivisions of the subject.

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The *Physician and the People,* by Dr. Leonard L. Landis, gives an account of why its author broke away from the "hidebound medical traditions" in which he was brought up, and established for himself and his practice a new foundation principle which he calls "democracy in medicine."

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Patricia's Awakening is the title of a first novel by Harold J. Barrett, who conducts a successful daily business column, "Dollars and Sense," in various American newspapers. His novel describes the modus operandi of this venture.

* * *

The Committee on Publicity Methods in Social Work has recently awarded the prize of $250 offered by Walter May, a Pittsburgh druggist greatly interested in social work. The recipient was Miss Eleanor R. Wembridge, of the Women's Protective Association of Cleveland, O., and the title of her play is *The First of May.* This play together with another that received honorable mention—*A Horse Shoe-Nail,* by Miss Frances B. Williams, of the National Child Labor Committee, New York City,—will be produced in Toronto at the June National Conference of Social Work in that city. The plays cover ideas in public health, race relations, child welfare, and other social fields, and were judged for their dramatic value as well as for their social message.

* * *

The Living Age for May 24th contains a number of interesting biographical sketches, namely, How Tolstoi Died; A Secret Police Report, by General Lvov, chief of police of the Moscow district; Mussolini, a Man of Many Interests, by Yoi Maraini, from the English *Saturday Review,* and Memories of Saint-Saens, by Falerio, from *La Revue Mondiale* of Paris. Sigrid Bugge Westmarr writes of her experiences as "A Nurse Among the Eskimos." The book review section is of unusual interest, including as it does reviews of Roman Rolland's *Mahatma Gandhi,* published by the Century Company; *La Guerre des Femmes: Histoire de Louise de Bettignies et de ses Compagnes,* by Antoine Redier, the story of a woman who during the World War organized an efficient intelligence service, crossed the German lines twenty times, was captured, imprisoned, tried, court-martialed, sentenced to death, reprieved and resentenced to life imprisonment, and who finally died after two years of prison and was buried with military and other high honors; *The Pirates' Who's Who;* giving particulars of the lives and deaths of the pirates and buccaneers, by Philip Gosse; and *Islam and the Psychology of the Musulman,* by Andre Servier, published by Chapman and Hall of London.

* * *

Now that Robert Frost, whose volume of verse, *New Hampshire,* won the Pulitzer prize for the best volume of verse published in 1923, has become so well known as one of the foremost poets of the United States, it will come as a surprise to many that he had to go to England to be appreciated. For years he wrote poems that he could not sell, meanwhile eking out a livelihood for his family by working a barren New England farm. This he finally sold, taking his family to England on the proceeds. Apparently America did not miss him—but when three years later he returned, with English laurels on his brow, she welcomed him with open arms and acclaimed him her most famous poet.

* * *

The Russian Health Ministry reports that from forty to seventy per cent. of the homeless children of that country in the larger cities are cocaine and alcohol addicts, and estimates that the vagrant children of Moscow and its suburbs alone number about fifty thousand. This evil of child vagrancy has been caused by the late famines.

* * *

The daily press has announced the closing by the local Turkish authorities of the Medical Department of the Constantinople College for Women. This college has only recently completed the building of a new medical headquarters and laboratories. Dr. Wilfred Post, of Princeton, was dean of the School of Medicine and Surgery. The Turkish police reported that they were acting under instructions from the Ministry of Public Instruction.

* * *

At a primary school examination, one of the questions was on the five senses. A pupil wrote: "The five senses are sneezing, sobbing, crying, yawning, coughing. By the sixth sense is meant an extra one which some folks have. This is snoring."—*Boston Transcript.*

* * *

Agriculturists in France are using fish flour. This is made from nonedible fish found in the nets of trawlers, and is exported to Germany, Spain and Switzerland. It is very rich in proteids and phosphates and is mixed with the food of poultry, rabbits, dogs, sheep, cattle and hogs. It is said to greatly increase the flow of milk and the laying of eggs.

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How to be happy, though civilized, has become the most insistent problem of contemporary life.—*Clayton Hamilton in The Century.*

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A labor university is to be founded in Santiago, Chili, by the municipal government through the efforts of the mayor of the city. The aims of the university will be to educate and train working men and women in trades most suitable to their natural abilities.—*Monthly Labor Review.*

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Dr. Matthias Nicoll, State Commissioner of Health, in a radio talk recently broadcast, commented drastically on the immediate need for further automobile legislation. Dr. Nicoll said: "If a modern car of Juggernaut should travel with the speed of an express train from Maine to California and leave in its wake 16,000 men, women, and children crushed or burned to death, and 400,000 more crippled and bruised, the people of this country would be horrified and aroused to make every effort to stop this inhuman slaughter; yet just this thing happened in the United States in 1923, except that several thousand little Juggernauts did the work over a longer period of time. So accustomed have we become to reading in the daily press the accounts of automobile accidents that we have grown more or less indifferent and inclined to accept them as a matter of course. This attitude of mind on the part of the public will get us nowhere in lowering the daily butcher's bill."

Abstracts from Current Literature

GENITOURINARY DISORDERS

A New Mercurial (Flumerin) for the Intravenous Treatment of Syphilis.—W. R. Snodgrass (*Lancet,* January 19, 1924) reports his results with flumerin given intravenously in twenty-five cases of syphilis. The vast majority of the injections were well borne and the side effects were no worse than those following any other intravenous mercurial. Flumerin should be used carefully but it is not contraindicated because of its toxicity. The following conclusions are drawn: 1. Gross secondary lesions show material alteration in the direction of healing within one week as a result of the administration of flumerin alone. No other mercurial preparation would appear to produce marked changes so rapidly. 2. The action is not lasting. Relapses in secondary cases may occur within a relatively short time even while treatment by flumerin is being continued. 3. A positive Wassermann reaction is usually not altered to a negative one. In this respect flumerin does not compare unfavorably with an equivalent use of other mercurials given without arsphenamine preparations. 4. Tertiary cases which present definite lesions show rapid clinical improvement with flumerin alone. The rapidity appears much greater than that produced by other mercurials but less than by combined treatment by mercury and iodide. No effect upon the Wassermann reaction was noted. This is not significant in view of the duration of treatment. 5. Marked toxic effects of the nature of acute mercurialism were occasionally seen. Conversely, cases of great toleration were noted. The reason for this is apparently not related to the patient's general physical condition. 6. Extended trial of flumerin should be made on account of its rapid antisyphilitic effect. This rapidity is its outstanding property. At the same time, even the restricted observations of the author indicate clearly that the drug should be used along with arsphenamine or iodides, as the case demands.

Treatment of Neurosyphilis with Sulpharsphenamine.—R. D. Halloran (*Boston Medical and Surgical Journal,* January 10, 1924) says that sulpharsphenamine is extremely simple of preparation and administration. It has a comparative freedom from local and general reactions. It may be administered intramuscularly without ill effects. The symptoms of renal irritation following several treatments are not satisfactorily explained; they may be due to excessive doses or to a cumulative toxic effect upon the kidney. The production of glycosuria in one case is not explained. An acute iritis developed in one case, which may have been due indirectly to the treatment. The spinal fluid changes compare favorably with those produced by the arsphenamines. There seems to be a certain uniformity and rapidity of alteration of diagnostic standards in advanced, unselected cases which have not been noted with other forms of treatment. This may indicate a greater toxicity of sulpharsphenamine for the spirochetes of the central nervous system.

Importance of Functional Tests in the Diagnosis of Surgical Diseases of the Kidney.—F. Suter (*Schweizerische medizinische Wochenschrift,* January 10, 1924) reviews his results in a series of 1000 renal functional tests, 396 of which were controlled by operation. The use of cryoscopy is important, but it has only a relative value. The indigocarmin test was always done in combination with catheterization of the ureters and failures were never encountered. The phenolsulphonephthalein test was found to be less reliable. The author prefers to use the combination of careful microscopical and chemical examination of the urine, cryoscopy and the indigocarmin test, as any single one of these tests is likely to fail in a given case. In difficult borderline cases, the indigocarmine test never failed the author and he never observed a single renal death in 302 nephrectomies after this test. In such cases cryoscopy of the blood, the determination of the residual nitrogen and possibly the Volhard concentration and dilution tests (as preliminary tests) are of special value. In cases of prostatic hypertrophy with possible injury of the kidneys, the concentration power of the kidneys, preceded by preliminary treatment with the indwelling catheter, should be carried out.

Syphilis as a Complication of Tuberculosis.—A. K. Bowman (*Lancet,* December 15, 1923) concludes as follows: 1. From a consideration of limited data the incidence of a positive Wassermann reaction has not been found to be more frequent among the tuberculous than among the general population. 2. Syphilis of the lungs existing as an isolated disease is extremely rare, but it may be that a number of cases recognized as pulmonary tuberculosis, and in which the Wassermann reaction is positive, are in reality cases of combined syphilis and tuberculosis of the lungs. 3. The two diseases when coexistent in the same individual may modify each other. 4. In cases in which syphilis and tuberculosis are present in the same individual, the administration of arsphenamine and its analogues may be followed by disaster. If organic arsenic is used, it should be administered in extremely small doses and at wide intervals. If no disturbance follows the injections, treatment may be continued cautiously, but it should be at least temporarily suspended if focal or general reactions occur and the condition carefully watched. 5. Organic arsenic compounds may be useful in cases in which the diagnosis is doubtful, but it is unjustifiable to employ them for diagnostic purposes save with extreme care, and always having in mind the possibility of a tuberculous flareup.

Technic for the Application of Radium (Emanation) in Carcinoma of the Prostate.—Ernest M. Watson (*Buffalo General Hospital Bulletin,* January, 1924) describes a technic with which it is possible accurately to deposit with the prostate, seminal vesicles and trigone of the bladder, 1500 to 2000 millicuries of radium emanation under novocaine anesthesia in about eight to ten minutes, and without great inconvenience to the patient. At a point along the median raphe about one and one half inches in front of the rectum the skin and subcutaneous tissues are infiltrated with 0.5 to 1.0 per cent. novocaine solution. A needle about four and one half inches long is used to infiltrate the tissues in front of the prostate. With a finger in the rectum as a guide, a medium sized trocar is inserted in the midline of the perineum up to the prostate. After withdrawing the obdurator, needles carrying a small glass tube or seed of emanation are inserted and fifteen to twenty seeds are then placed in different portions of the gland by simply changing the axis of the trocar. The seeds vary in strength from 0.6 to 1.0 millicurie and are placed about 1.0 cm. apart throughout the entire gland as indicated. The involved seminal vesicles may also be reached in this manner by passing the needles through the gland. Enlargements of the middle and lateral prostatic lobes, elevation and infiltration of the lower portion of the trigone, and the rounding and fixation of the anterior commissure may also be seeded without removing the trocar.

Treatment of Tuberculosis of the Urinary Tract.—James R. Macalpine (*British Medical Journal,* January 19, 1924) states that surgical endeavors should be directed to the kidney instead of the bladder. The kidney is primarily at fault and almost invariably the disease is unilateral in its early stages and the bladder is affected secondarily. The other kidney will become affected in a large proportion of cases at a later date, and if the primarily involved organ is removed, the prognosis of the disease will be good, both as regards the bladder, which will heal, and as regards the other kidney, which is not very likely to become secondarily infected. In the absence of contraindications, nephrectomy must be carried out without delay in every case. Gas and oxygen anesthesia is the most suitable, as it does not affect the remaining kidney and does not have a tendency to light up foci of latent tuberculosis in the lungs. The author removes as much of the ureter as can conveniently be taken away from an ordinarily generous loin incision, and he uses the cautery in its division. Usually the upper and lower segments of the ureter are most affected. If the surgeon gets down as far as the beginning of the uninvolved area healing will be just as rapid as if an extra few inches were removed. An exception should be made in ureters which are occluded at some point in their course. If such a ureter be left the portion above the obstruction a sinus in the flank will result. Besides, an obstructed ureter is difficult to remove because of the periuteral and perinephric sclerosis and ureterectomy

should therefore be avoided. It is good practice to drain the wound after nephrectomy even after a complete removal of the kidney. The perinephric fat should also be removed, as it is a common source of subsequent infection. The bladder need no serious consideration, as they usually diminish and eventually disappear after a sufficient lapse of time. In addition to the usual vaccine, tuberculin and hygienic treatment of the postoperative tuberculous bladder, the use of sparking through the high frequency current gives some very good results. *Noli me tangere* may be said to be the watchword in bilateral renal tuberculosis, as ultimately only discredit may be brought on surgery by the use of operative measures in this condition.

Tuberculosis of the Kidney and Renal Functional Tests.—H. Wildbolz (*Schweizerische medizinische Wochenschrift,* January 10, 1924) states that tubercle bacilli may be excreted in the urine without there being any tuberculous disease of the kidneys but in the presence of tuberculosis elsewhere (not only in the seminal vesicles), and therefore functional tests should not be omitted, as they almost always lead to a diagnosis in early cases and also give decisive information in regard to the question of bilateral renal involvement. The presence of tubercle bacilli and leukocytes in the ureteral specimen of urine should not be considered as proof of renal disease, as they also occur in ascending tuberculosis of the ureter with healthy kidney, the function of which may be intact. Diagnostic splitting of the kidney is a dangerous procedure because of the subsequent miliary infection, infection of the wound bed, and great unreliability because small foci remain undiscovered. Pyelography and pneumoröntgenography are dangerous in tuberculosis for the same reasons. The functional test never failed in about five hundred nephrectomies, even in the presence of small tuberculous foci. The use of Ambard's constant, so strongly advocated by the French school, cannot replace functional kidney tests combined with ureteral catheterization. The author considers the indigocarmin test, reinforced by the comparative cryoscopy of the urine from both sides, the comparative determination of urea excretion on both sides and the phloridzin test as the method of choice.

Diagnostic Value of Stalagmometric Examination of the Urine.—Andreas Matusovszky and Alexander Laczka (*Zentralblatt für Gynäkologie,* December 15, 1923) state that the surface tension, the measurement of which was applied to the urine and introduced into gynecology, and which is reduced by the presence of colloid and semicolloid substances, called stalagmones, gave the authors definite results in pregnancy and after anesthesia, as a result of the marked disturbance in the metabolism of albumin and indefinite results in myomas, abscesses, malignant tumors, etc. These stalagmones may also affect the specific gravity of the red blood cells. These interesting variations in the surface tension may be explained by additional investigations on the individual substances which produce them and their relationship with nutritional conditions and conditions of life.

Flocculation Reactions as Substitutes for the Wassermann Test.—F. Green (*Journal of Laboratory and Clinical Medicine,* April, 1924) reviews the various reactions which have been developed for the serodiagnosis of syphilis. He did not find the Sachs-Georgi reaction as sensitive as the Wassermann. The Dreyer and Ward modification of the Sachs-Georgi flocculation reaction was tried on more than 150 sera, and the results compared with the Wassermann test. In view of the simplicity and ease with which this modification may be standardized, granted an increase in its sensitivity and improvement in the matter of reading the results, it may in future very well stand beside the Wassermann reaction.

A Comparative Study of the Wassermann and Meinicke Reactions.—C. B. McGlumphy (*Journal of Laboratory and Clinical Medicine,* April, 1924) describes the preparation of the lipoid extract, the standardization of the extract, dilution of antigen, and the test proper of the Meinicke reaction. A comparative study of this reaction with that of Wassermann was made in 1162 cases. There was a high percentage of agreement of the two reactions. In a small group of cases in which the diagnosis of syphilis was unquestionable, the results obtained by the Meinicke test were superior, as the clinical data furnished conclusive evidence of the value of the Meinicke reaction in certain cases where the Wassermann reaction was negative.

Treatment of Gonorrheal Epididymitis with Intravenous Injections of Calcium Chloride.—Alvin E. Cerf (*Therapeutic Gazette,* March 15, 1924) from an experience of seventeen cases concludes that calcium chloride in ten per cent. solution given intravenously in five or ten c.c. quantities is harmless. It has a decided effect in bringing about rapid subsidence of the swelling in the epididymis, hastens the absorption of the exudate, minimizes the resultant pathology involved in this area. As it apparently greatly increases the resistance of the tissues to bacterial invasion, its early employment is important.

The Status of Epidemic Encephalitis as an Independent Disease.—Peter Bassoe (*Illinois Medical Journal,* February, 1924) admits that in spite of the building up of a varied, yet quite individual, symptomatology, including numerous and very characteristic sequelæ and of definite almost pathognomonic morbid anatomy, nevertheless the position of epidemic encephalitis as a disease *sui generis* is not absolutely secure.

Treatment of Gonorrhea by Intravenous Injections of Acriflavine.—J. R. Jacob and K. V. Verasingam (*Indian Medical Gazette,* February, 1924) report a series of thirty cases treated by this method between July 1st and December 31, 1922. The first ten cases were treated with 1 in 1000 solution and the subsequent twenty with a 1 in 500 solution in normal saline. The first dose was 100 c.c., followed in two days by 150 c.c. and then 200 c.c. at intervals of three to four days. In early cases rapid results are obtained. In cases with acute urethral inflammation, with painful micturition, and local edema with extreme tenderness, all local remedies with attendant pain are obviated. In cases of posterior urethritis the best results are obtained by combining the intravenous method with local treatment.

PEDIATRICS

Treatment of Megacolon in Children.—E. Monnier (*Schweizerische medizinische Wochenschrift,* October 18, 1923) states that the treatment of megacolon must be directed toward the cause of the stasis. The evacuation of the decomposed fecal masses and the resulting avoidance of toxemia is the aim of both the internal and surgical treatments. Treatment with the rectal tube is uncertain, extremely troublesome and possible only in a hospital. The results are more favorable in the spastic cases with the use of atropine. In some cases blunt dilatation of the contracted sphincter is useful. The opium treatment is sometimes successful. However, the mortality with internal treatment is quite considerable.

The surgical treatment may be divided into two groups: 1. Palliative operations, such as colostomy, colopexy, coloplication and the various kinds of exclusions and anastomoses. 2. The second group constitutes the radical procedures, including the various resections of the pathological colon. The palliative procedures have produced some good results, even though they are rather uncertain. In recent years there is a tendency to carry out the palliative operations as preparatory procedures for the radical operations. The best results are obtained when a communication between the cecum and the lower part of the sigmoid flexure is established. The main reason for the unsatisfactory results with the palliative operations is the fact that the dilatation of the colon persists even though a regular passage of stools is obtained. The ideal procedure consists in the resection of a large part of the dilated colon with immediate anastomosis of the two cut surfaces. This operation, however, is applicable only when the general condition of the patient is good and a good emptying of the colon is possible.

Children's Upper Respiratory Abscesses Descending into the Neck and Mediastinum.—Otto Glogau (*Archives of Pediatrics,* December, 1923) states that in childhood, abscesses within the upper respiratory and alimentary tracts occur frequently and may easily descend by way of the regional lymph vessels and glands into the parapharyngeal, retropharyngeal and retroesophageal loose connective tissue spaces, causing phlegmon of the neck and descending alongside the vascular sheath into the mediastinum, causing mediastinitis, sepsis and death. However, with the swelling in the neck increasing in size and becoming more tender and disclosed, with the occurrence of pains in the region of the jugulum and the appearance of severe general symptoms, the typical external operation should be resorted to.

It consists of a wide exposure of the vascular sheath and of the direct opening and draining from there of the parapharyngeal, retropharyngeal and retroesophageal spaces. These deep descending abscesses frequently are complicated by suppurating glands intimately connected with the jugular vein, which may be extended like a flask; they can hardly be reached by simple incision from without or within, without endangering the life of the child from puncturing the large vessels, especially the external jugular vein. In severe cases, where mediastinitis is threatening or present, the anterior and posterior collar mediastinum is exposed; it is sealed with iodoform gauze if found to be still healthy, and is drained if diseased. Even in the absence of pus, where the descending infection expresses itself by spreading edema and infiltration, the exposure of the vascular sheath and the wide opening of the loose connective tissue spaces of the neck combined with prophylactic collar mediastinotomy, appears to be the only logical method. When used early, the typical external operation is a life saving procedure in abscesses descending into the neck and mediastinum.

Acute Bacillus Coli Infection of the Gastrointestinal Tract in the Newborn Child.—R. Chalmers, (*Lancet,* October 20, 1923) maintains that many of the gastrointestinal disorders of early infancy are the result of toxemia in the mother acting on the fetus in utero. Early jaundice, flatulence, vomiting and difficulties of providing a suitable diet are always more likely to be encountered in children of mothers who were afflicted with toxemia during their pregnancy than in other infants. It cannot always be determined with certainty whether the infection is of antenatal, natal, or postnatal in origin, as all three types have been found. A streptococcus infection is often combined with a Bacillus coli infection in the mother, in which case the streptococcus infection is primary and the Bacillus coli infection is secondary. Inasmuch as both of these organisms are found in the uterine discharge, it is possible for the child to become infected with mucus during its passage through the maternal passages.

Stridor in Infancy and Early Childhood.—Karl Hochsinger (*Wiener klinische Wochenschrift,* October 11, 1923) distinguishes five types of stridor occurring in early infancy and childhood: 1. Congenital inspiratory stridor, which is not due to catarrhal conditions in the respiratory tract, but to enlargement of the thymus, and is consequently followed by remarkable success with roentgenotherapy. 2. Expiratory whooping occurs in tuberculosis of the pulmonary lymph glands during the first year of life. It is important that this form should be recognized while it may still occur in an isolated area. 3. Stridor in bronchotetany affects inspiration and expiration to the same extent and is difficult to differentiate from the stridor occurring in inflammatory diseases of the lung (gradual onset, galvanic hyperexcitability and a good reaction to an antispasmodic dietary). 4. Pharyngeal stridor occurs in retropharyngeal lymphadenitis. 5. Stridor also occurs in pseudocroup.

Fate of the Premature Infant.—As a result of his investigations, Paul Brandt (*Monatsschrift für Kinderheilkunde,* December, 1923) draws the following conclusions: The fate of the prematurely born infant is not very rosy. About ten per cent of these infants weigh less than 2500 grams and are less than 46 cm. long at birth. About forty-two per cent of these infants die before the first year. The majority of them are sickly. Their only salvation lies in careful nursing, the application of heat, and dietotherapy. The most careful nursing is a prime requisite. The author has at his disposal a special room for premature infants, which is kept at a room temperature of 24°C. All draughts from opening of the door are avoided by the use of screens and the room is entered only by the physician and the nurse. The infants are put in baskets which are loosely lined with linen. Very small infants are wrapped in cotton. A veil of gauze is laid over the baskets and special heat is supplied by hot water bottles. Every form of cooling is most carefully avoided and bathing is omitted in the first few weeks. During the first few days and weeks the food consists of breast milk, which is later supplanted by mixed feeding with breast milk—albumin milk—and buttermilk and after a few months by cow milk mixtures. Phosphorus with codliver oil is given in every case from the beginning of about the second month as a prophylactic. These infants require the most careful watching for the first year.

The Neonatal Period from a New Point of View.—As a result of some colloid chemical investigations on serum, Josef Duzár (*Monatsschrift für Kinderheilkunde,* December, 1923) maintains that the neonatal period must be divided into two periods, of which the first extends from the first to the tenth to the fourteenth day of life and the second period up to the end of the second month of life. The first period is characterized by permeability of the gut, hydrolability, a tendency toward edemas and to infectious diseases and the lack of antibody formation. It also shows certain peculiarities, as evidenced by immaturity of heat regulation, a tendency toward erythemata of the skin and mucous membranes, initial loss of weight, transitory fever, uric acid infarcts and icterus neonatorum as a sign of hypofunction of the liver.

Puncture of the Cisterna Magna in Children.—James G. Kramer (*Ohio State Medical Journal,* May, 1924) avers that puncture of the cisterna magna is a justifiable procedure. In the treatment of cerebrospinal meningitis and its complications it is the method of choice in giving serum. In conjunction with lumbar puncture it should be used for spinal lavage and diagnosis. For the righthanded operator the child is placed in the left lateral position while an assistant flexes the head on the body and the thighs on the abdomen. The palm of the left hand is placed over the upper occiput and parietal region with fingers outstretched to hold the head firmly on the table. The thumb is placed so as to mark the upper edge of the recess between the external occipital protuberance and the spine of the axis. With the right hand the ordinary lumbar puncture needle is inserted in the midline just below the occipital protuberance, as guided by the left thumb, and it is directed in a line drawn over the external auditory canal and the glabella. It goes through the soft tissues easily until it arrives at the occipitoallantal ligament, which extends from the posterior border of the foramen magnum to the atlas. Here resistance is encountered which is overcome by firm steady pressure, which pressure is released when the sensation of "give" or sudden loss of resistance is felt. The distance from dura to medulla is one and one-half cm. in the adult, but when the upward direction of the needle is considered, 2.5 to 3.0 cm. may be traversed before damage is done.

Differential Diagnosis of Umbilical Colic.—Felix Metis (*Monatsschrift für Kinderheilkunde,* December, 1923) examined the leukocyte picture of twenty children, mostly girls, who were afflicted with repeated attacks of abdominal pain, located principally around the umbilicus. The investigations covered not only the content of neutrophiles but also the displacement to the left; they also included the acidity of the gastric juice. There was no shifting to the left. All the patients showed evidences of a neurotic temperament. The pains are attributed to intestinal spasms. The most important element in the treatment is that of the neuropathy.

Infant Feeding Simplified for the General Practitioner. Maurice Blatt (*Illinois Medical Journal,* February, 1924) asserts that normal infants gain well and have the minimum of gastrointestinal disturbance on mother's milk or mother's milk plus complemental feeding. Artificially fed infants thrive on formulas based upon an initial feeding of one and one half ounces of milk and one tenth of an ounce of carbohydrate to the pound of body weight, diluted with water to make a total daily feeding of the number of ounces represented by the age in months plus two, multiplied by five. Blatt also advises phosphorized codliver oil from the third month, and he also starts both cereals and green vegetables at this age. The nursing or feeding interval recommended is the four hour one from birth, six feedings daily. An infant will take at least two ounces more at a feeding than its age in months; boiling milk for two minutes makes the casein curd smaller.

Czerny Butter Flour Mixture.—L. J. Wisch (*Journal of the Indiana State Medical Association,* April, 1924) records the following contraindications to the butter flour mixture: 1. It should not be used in cases where the malnutrition is due to some specific wasting disease as syphilis or tuberculosis. 2. It is contraindicated in acute nutritional disturbances such as disturbed metabolic balance or acute dyspepsia. 3. It is usually disastrous in chronic indigestion with fat intolerance. It finds its useful sphere in premature infants of enfeebled nutrition, marasmus, and chronic dyspepsia.

Value of the Low Fluid Content of the Butter Flour Mixture.—Harry M. Greenwald (*Archives of Pediatrics,* December, 1923) states that butter flour mixture is an artificial infant food simply and easily prepared. With its use the artificially fed infant is satisfied by a fluid bulk not exceeding that normally ingested by the breast fed infant. It permits the employment of fat, an important factor in the child's economy, without the manifestations of such disturbances as are frequently observed in the use of the ordinary fat enriched mixtures. In butter flour mixture we have a food that, in quantity and in the correlation of fat, proteid and carbohydrate to one another, more nearly simulates breast milk than any other mixture heretofore employed.

Tuberculosis in Childhood.—Murray Bass (*Journal of the Medical Society of the State of New Jersey,* April, 1924) states that hilus infection with tuberculosis is the usual type found in childhood and that the involvement of the tracheobronchial glands is secondary to a primary focus of infection in the lung. This primary focus is sometimes so minute as to almost baffle discovery. Infiltration of the apex of the lung and cavity formation, so often seen in adults, are rare in children especially under ten years of age. The aerogenous route of infection is by far the commonest but the alimentary tract and the tonsils may be portals of infection. In America the type of infection is the human in ninety per cent. of all cases, thus leaving only ten per cent. due to bovine bacilli.

Scoliosis: Its Prevention and Treatment.—S. Kleinberg (*Archives of Pediatrics,* December, 1923) remarks that structural scoliosis is a fixed deformity of the spine and trunk which occurs very frequently among children. The surest procedure for the early recognition of scoliosis is the periodical examination of the naked back of every school child, and particularly of the children between the ages of five and ten years. In a small percentage of cases the scoliosis remains mild. But inasmuch as we have no criteria by which we can judge whether a given deformity will remain mild or grow worse, and since we know from experience that in many cases moderate and even severe grades of deformity develop, with consequent serious interference with the functions of the thoracic and abdominal organs, it is advisable that treatment should be instituted just as soon as the deformity is discovered. There is no known treatment by which we can cure structural scoliosis, but there are several systems of treatment by which sixty to seventy per cent. of the patients can be improved and often to a highly satisfactory degree.

The essential in all treatment is the correction of reduction of the curve by the voluntary or forced assumption of that attitude of the body which is the direct opposite of the attitude of the deformity. This may be obtained by corrective plaster jackets, plaster or celluloid corsets, spinal braces, or gymnastic exercises.

Clinical Aspect and Etiology of Perthes-Calvé-Legg's Disease (Osteochondritis Deformans Juvenilis).—H. Reich (*Schweizerische medizinische Wochenschrift,* December 13, 1923) states that this disease occurs much more frequently than has been believed heretofore. It affects particularly children between the ages of four and eleven years. Boys are affected much more often than girls. It may be both unilaterel and bilateral. The pathologicoanatomical investigations reveal the presence of a primary necrotic focus with subequent granulation tissue in the head of the femur. As a result of weight bearing the less resistant head becomes spread out in width. The etiology is still uncertain; it may be produced by various causes. The general constitution, particularly disturbances in the thyroid gland activity, play a more important part than has been admitted heretofore. The clinical picture is characteristic: it has an insidious onset with pains and limping, both of which are slight. Very early there is limitation in the movements of the diseased hip, almost always in abduction and rotation. All the other symptoms, which play an important part in the diagnosis of diseases of the hip-joint, are not pronounced and show no characteristic behavior. Marked pains and great favoring of the affected side on walking and muscular tension are almost never observed. The general condition is not affected. The x ray plate reveals typical changes, which cannot be mistaken for any other disease. It provides the most definite diagnosis and is a valuable aid in the observation of the course of the disease. In the differential diagnosis, tuberculous coxitis is the most important disease. The tuberculin test is valuable as a differential test. These two conditions also show absolutely different pictures in the röntgenogram. The differentiation from coxa vara is possible only with the röntgenogram. It is not difficult to eliminate congenital dislocation of the hip. The course of the disease is chronic, lasting for years, and during this time the upper end of the femur undergoes a complete change in form. In the final stage, abduction and rotation are permanently limited.

There are no subjective symptoms, with the exception of an occasional persistent slight limping. Conservative treatment is the best. With rare exceptions, the patients go about quite freely, but they should avoid marked exertion.

It is advisable for the patient to take massage, mud baths and passive motion so as achieve the widest possible excursions of abduction and rotation. In certain cases plaster casts give good results as they prevent excessive deformity of the head of the femur. In patients with deficient thyroids treatment with thyroid gland preparations may be tried.

NEUROLOGY

The Regulating and Reflex Process.—P. T. Herring (*British Medical Journal,* October 20, 1923), in commenting upon the importance of the synapse in the regulating and reflex process, states that drugs exert their influence on the nervous system on the synapses or the receptive substances between the endings of the efferent nurons and the organs which they supply. Fatigue is the result of the action of waste products on these structures. Certain toxins have a similar action. Various substances affect different synapses and spread from these in a definite manner. They may affect first the synapses in the highest level of the nervous system, as does chloroform, and gradually spread to the synapses at lower levels, affecting the pathways of the vital reflexes only at the end. It may also begin in the receptive substances and cause death from paralysis of the respiratory muscles, as in curare poisoning. In atropin poisoning or in overdosing with digitalis it may gradually ascend to the higher levels. Many of the signs of ill health may be due to toxins acting on different parts of the nervous system. This theory would explain the symptoms of botulism and their seriousness might be explained by the involvement of the synapses on the reflex arcs of the vital processes at an early stage. More common conditions might be explained by affections of less vital processes. Exhaustion, nausea, anorexia, temperature changes, cardiac, vasomotor, and visceral disturbances may be due to action of toxins on the synapses of the pathways concerned in the regulation of normal processes. Disturbances in the normal processes are recognizable by the subjective sensations and by the alterations in the reflexes.

Phenobarbital and Potassium Borotartrate in Epilepsy.—M. Regnard (*Bulletin général de thérapeutique,* December, 1923) states that he has obtained good results with both of these agents. In some cases, however, their combined use is preferable, for the purpose of avoiding the psychic disturbances sometimes witnessed following the use of phenobarbital (luminal) alone. In most patients, especially at the beginning of treatment, ingestion of phenobarbital causes marked constipation, which is effectually counteracted by the laxative properties of potassium borotartrate. The treatment is usually begun by prescribing two grams a day of the borotartrate and 0.1 gram of phenobarbital. If the seizures persist, the daily dose of the borotartrate is increased to three grams; on the other hand, if improvement is seen, the dose of phenobarbital is reduced to 0.05 or even 0.02 gram. a day. The treatment can then be kept up for months, or even years without exerting any pronounced untoward action.

Traumatic Neurasthenia.—E. Farquhar Buzzard (*Lancet,* December 15, 1923) believes that the signs and symptoms of traumatic neurasthenia correspond with those of anxiety neurosis, complicated by certain factors, and he considers it as an emotional condition, which is not dependent upon any physical disturbance induced by any trauma but upon a number of psychological factors. Even though the development of neurasthenia is favored by the knowledge that an injury has been sustained, nevertheless the neurasthenia is not directly due to the trauma. The author prefers the term "anxiety neurosis following trauma."

MEDICAL JOURNAL AND RECORD

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Medicolegal Notes.

EVIDENCE OF PARALYSIS OF LARYNX ADMISSIBLE TO PROVE IMPAIRMENT OF VOICE.

In an action for injury sustained by contact with an electric wire, evidence of physicians that the left side of plaintiff's larynx was paralyzed, and that he suffered from paralysis of the muscles to which the vocal cords are attached, was held admissible though no allegations of such injuries were pleaded, where it was alleged that plaintiff's voice would be weakened and impaired, since a paralysis of the larynx or its muscles necessarily proves an injury to the voice.—Smissman v. Wells (Mo. App.), 225 S. W. 935.

ARMY SURGEON COMPETENT AS MEDICAL WITNESS

The Colorado Supreme Court holds, Patton v. People, 221 Pac. 1086, that the evidence of a medical witness was admissible in a murder case although he did not have a license to practice in the State where it was shown that he was a regularly licensed and practicing physician and surgeon, and also that he was a commissioned surgeon in the United States army, and as such was not prohibited from performing his lawful duties in the State.

PATIENT'S STATEMENTS OF PAST CONDITION NOT ADMISSIBLE.

In a personal injury case testimony given by the plaintiff's physician, detailing statements made by plaintiff to the physician while under his treatment, as to the state of his health before and after the injury, was held to be a violation of the rule against the admission of the statements of the patient with respect to his past condition and the history of the case. Adolf v. Brown (Mo. App.), 255 S. W. 947. But the admission of this evidence was held to be harmless error when the facts had been otherwise established by competent evidence and were not disputed.

PRIVILEGED COMMUNICATIONS—THEIR NATURE.

The Montana Supreme Court, Garrett v. City of Butte, 221 Pac. 537, recognizes the general rule that the incompetency of a physician to testify concerning information acquired while attending a person in a professional capacity extends to staff physicians of a hospital; but the information obtained in order to place such evidence under the ban as respects the physician or an attendant physician must be such as is necessary to prescribe for the patient. In an action for injuries sustained by falling on an icy sidewalk it was held that a statement of the plaintiff to the staff physician of the hospital where she was treated that she fell at a different place from that alleged by her in her complaint did not come within the rule of exclusion of privileged communications.

RECOVERY FROM PHYSICIAN FOR MALPRACTICE AND FOR HIS NEGLIGENCE CAUSING THE ORIGINAL INJURY.

The Missouri Supreme Court holds, Parkell v. Fitzporter, 256 S. W. 239, that where a physician negligently ran down and injured a person, and by subsequent malpractice in the treatment of the injured person's leg aggravated the injury, the fact that the latter recovered damages in an action for damages for the negligent operation of the automobile did not preclude recovery in another action for damages caused by the malpractice. The malpractice alleged consisted in sewing into a wound in plaintiff's leg a metal garter buckle which had been driven into the wound by the collision, inducing infection and gangrene, resulting in permanent disability.

ORDINANCE FORBIDDING ADULTERATION OF MILK HELD VALID.

The Arizona Supreme Court, Gardenhire v. State, 221 Pac. 228, holds that a statute authorizing a town to prescribe regulations "necessary and expedient for the prevention or suppression of disease," taken and construed together with the law creating boards of health, gave the legislative body of the town of Yuma, impliedly, if not directly, power to license and regulate the sale of milk and its products within its limits, and to forbid its adulteration, and to punish those violating ordinances enacted for that purpose.

NEGLIGENCE OF PHYSICIAN HELD NOT FOR JURY WITHOUT EXPERT TESTIMONY

The Nebraska Supreme Court holds, Tada v. Warta, 196 N. W. 901, that, "in an action against a physician for malpractice where the acts as negligence require in their performance the exercise of professional skill and knowledge, and are such with respect of which a layman can have no knowledge at all, the jury may not draw the inference of negligence without the aid of expert testimony as to the quality of such acts to guide them; in which case the doctrine of 'res ipsa loquitur' has no application."

LATENT ACCIDENTAL INJURY FOUND TO "OCCUR" ON BEING DISCOVERED BY X RAYS

The Nebraska Supreme Court, Selders v. Cornhusker Oil Co., 196 N. W. 316, holds that a latent accidental injury to a workman, seeming at first to be trifling but subsequently resulting in disability, may be found to "occur" when discovered by means of x rays, within the meaning of the Nebraska Workmen's Compensation Law, providing that no proceeding for compensation shall be maintained unless the claim therefor is made within six months from the occurrence of the injury.

GENERAL HOSPITAL HELD NOT OBJECTIONABLE IN RESIDENTIAL SECTION

The Nebraska Supreme Court hold, Thompson v. Evangelical Hospital Association, 196 N. M. 117, that the fact that a hospital in itself is objectionable to those residing in close proximity to the site of a proposed hospital, or that the value of property in the neighborhood may be adversely affected, do not ordinarily constitute sufficient grounds to warrant a decree enjoining its erection. The court said: "In modern life a hospital is a public necessity, and to be of service to the public it must be so situated as to have available for its use electric current, gas mains and sewers. And, as many of the patrons will be without private conveyances and obliged to depend upon the street cars for service to and from the hospital, it is almost imperative that it be located where these conveniences are accessible."

EXISTENCE AND EFFECT OF HIGH BLOOD PRESSURE HELD FOR JURY UNDER CONFLICTING EVIDENCE.

In an action on an insurance policy, defended on the ground of failure to disclose former illnesses, there was medical evidence that the insured's blood pressure in February, 1921, was 250, and was subsequently reduced to 200 and then to 160 and in October, 1921, preparatory to issuing the policy, it was found to be 135, or about normal, and that he had no symptoms of nephritis or arteriosclerosis. It was held, Missouri State Life Ins. Co. v. Witt, Arkansas Supreme Court, 256 S. W. 46, that, the evidence conflicting as to whether the insured had high blood pressure before and at the time the examination was made and the policy issued, and, if his blood pressure had been high, whether it had affected his health or longevity, these things became matters of dispute for the jury.

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MISCELLANY

The Sachs-Georgi Reaction and Its Significance in the Diagnosis of Latent Syphilis Based on Obstetrical Experiences.—Bela v. Váró (*Wiener klinische Wochenschrift,* May 10, 1923) states that the applicability of the Sachs-Georgi reaction cannot be determined by the percentage of the cases in which the results coincide with those of the Wassermann reaction, inasmuch as the Sachs-Georgi test was positive and the Wassermann reaction was negative in nine cases of latent syphilis without clinical symptoms, in which the suspicion of syphilis was aroused merely by the habitual abortions and the syphilitic premature births. If the syphilitic newborn infants had not been seen these nine cases would have been considered as nonspecific Sachs-Georgi reactions. With the aid of provocative methods the Wassermann reaction was positive half and half in four of these cases. Consequently the Sachs-Georgi reaction is indispensable in the diagnosis of truly latent syphilis (without clinical symptoms). Inasmuch as there are cases of syphilis in which the Wassermann reaction is positive and the Sachs-Georgi test is negative, these two tests do not replace each other but they are complementary to each other. Ever since not only the Wassermann reaction but also the Sachs-Georgi reaction is used in the examination of the blood of mothers of syphilitic newborn infants, not one woman was found which could be classified in accordance with Colles's law; these were all found to be syphilitic. Consequently there are no syphilitic newborn infants without a syphilitic mother. According to the findings with the Sachs-Georgi reaction this law is untenable.

Origin and Diagnostic Value of the Cutaneous Striæ During Pregnancy.—P. Sfameni (*Zentralblatt für Gynäkologie,* May 5, 1923) states that the formation of striæ on the abdomen depends upon the following factors: 1, the increase in the volume of the abdominal contents; 2, the deposition of fat in the subcutaneous cellular tissue; and 3, the simultaneous coincidence of both of these factors within a short time. For this reason pregnancy almost always produces abdominal striæ, whereas ascites and tumors almost never produce abdominal striæ. The striæ on the breasts are due to the deposition of fat and the hypertrophy of the milk gland. Abdominal and mammary striæ are associated almost exclusively with pregnancy and therefore have a considerable significance in the diagnosis of pregnancy. The striæ on the thighs are produced only by a rapid deposition of fat. Their significance in the diagnosis of pregnancy is almost nil. The striæ on the abdomen, the breasts, and the thighs show variations in direction, arrangement and in structure. This is due to the varying tension to which the skin in the different regions, and especially the anatomical conditions, is subjected.

Syphilis and Pregnancy.—H. Thaler (*Wiener klinische Wochenschrift,* April 19, 1923) calls attention to the fact that in syphilis an unusual enlargement and increased weight of the placenta is frequently demonstrable; it is also characterized by a considerably increased firmness and a pale red color. The histological changes in the placenta include a marked widening of the chorionic villi from proliferation and edema of their connective tissue and their bloodvessels show more or less complete localized obliterations from endarteritis and endophlebitis. The epithelium frequently shows defects and in some places proliferation. The villi are frequently adherent, forming larger complexes, or they may be separated by narrow intervillous spaces carrying but little blood. These changes constitute an important index for the demonstration of fetal syphilis, but they may also be found in syphilitic women in connection with nephritis or after fetal death without the occurrence of syphilis. Spirochetes may be more or less numerous in syphilitic placentas and also in placentas almost normal; they are also found within the intervillous spaces and in apparently normal villous epithelium just at the time of their passage through them. The healthy placenta does not act as a filter to spirochetes. The umbilical cord of syphilitic fetuses often show inflammatory changes in the vascular walls in the form of small celled infiltrations, especially near the fetal end, affecting mainly the media and adventitia. The Wassermann reaction is not a reliable index of syphilitic infection as it shows eight to ten per cent. of nonspecific reaction during pregnancy and negative reactions in actually infected infants.

In the matter of prophylaxis, at least five years should have elapsed between the infection and marriage of a syphilitic individual, of which period the last three should be free from syphilitic manifestations of disease. The Wassermann reaction should be negative on repeated examination for at least one year. Even though these conditions are fulfilled, an existing possibility of the transmission of syphilis cannot be definitely excluded. The treatment of syphilis during pregnancy should be the usual course of treatment. Arsphenamine is well borne and increases the chances of life in the infant. In syphilis a fever frequently develops during the puerperium. The course of syphilis is affected by pregnancy in the sense that it is often more severe and the tendency to recurrences is increased.

Effects of Lysozyme.—Onari Nakamura (*Wiener klinische Wochenschrift,* May 3, 1923) confirms the finding of a solvent action of tears and of chicken egg albumen upon saprophytic bacteria, especially sarcinæ in a dilution of 1:100,000 and their comparative resistance to heat. They also act on dead microorganisms and do not lose any of their activity on repeated use. One eight thousandth normal acid increases their effect. Acids which are stronger than 1:2000 normal inhibit it, but an overneutralization by alkali results in a rapid dissolution of the organisms, even though the amount of tears originally added would not have been sufficient to obtain it. Some sarcinæ are resistant to tears.

Treatment of Beginning Incarceration of the Retroflected Gravid Uterus.—F. Unterberger (*Zentralblatt für Gynäkologie,* May 5, 1923) recommends the elevation of the retroflected gravid, incarcerated uterus by strapping the patient for ten to fifteen minutes in a position of marked elevation of the pelvis, which should be repeated one or more times. The success of this maneuvre depends apparently upon the suction power of the uterus as a result of the negative pressure. Every maneuvre of straightening the uterus by way of the vagina should be omitted.

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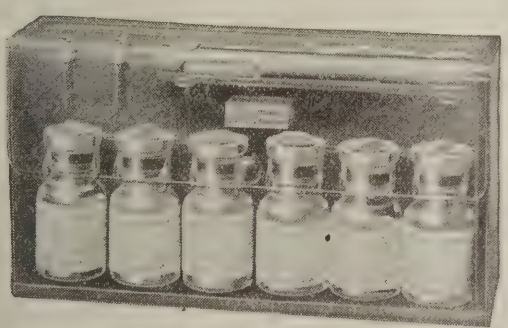

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Effect of Milk Acquired in an Aseptic Manner and Injected Parenterally in Various Internal Diseases.—F. Högler and F. Seidel (*Wiener klinische Wochenschrift,* May 3, 1923) assert that the unfavorable effects of parenteral injection of milk are due to the presence of microorganisms and toxins in the milk. If milk is acquired in an aseptic manner and sterilized, the intramuscular injections of five to ten c.c. of milk thus acquired are rarely followed by fever or subjective disturbances. The authors saw favorable results in such conditions as arthritis, bursitis, tendovaginitis and in bronchitis. They also observed a distinct diuretic action about eight to twelve hours after the injections. This may have some bearing on the effect of the treatment of inflammatory edemas. Inasmuch as the same results are obtained as with ordinary sterilized milk, the curative effects are not due to the fever but to the colloidal elements of the injected milk. The fever is apparently due to the toxic admixtures.

Experimental Tar Carcinomas in Mice.—B. Lipschütz (*Wiener klinische Wochenschrift,* July 6, 1922) found pigmented tumors in gray mice (but not in white mice) which were located in the corium and consisted of true melanoblasts. He also describes certain changes in the sebaceous glands, following the local application of tar. Both of these pathological lesions are not the results of the local action of the tar as they are also found in regions which are far removed from the areas not coated with the tar. It was also impossible to produce pigmented tumors by implantation in animals that were not painted with tar.

Hydrogen Ion Concentration of the Blood in Carcinoma.—William H. Chambers (*Journal of Biological Chemistry,* February, 1923) determined the hydrogen ion concentration of the dialysate from the venous blood in forty-five cases of carcinoma. At 20° C. it averaged 7.45, which was slightly more alkaline than that of normal subjects, 7.31. In general, the degree of alkalinity corresponded to the size and extent of the tumor growth, small tumors without metastases showing little or no increase above the normal. The second part of this study was done by Chambers and R. E. Kleinschmidt. The CO_2 content and the CO_2 tension were determined in the venous blood of normal individuals, and from carcinoma cases and various other pathological conditions. The venous CO_2 tensions were read from the CO_2 absorption curves which were plotted at the venous oxygen tension, or from those plotted from fully oxygenated blood with a correction for venous oxygen unsaturation. The hydrogen ion concentration of the blood was calculated from the CO_2 bicarbonate ratio. The average reaction of twelve determinations on normal bloods was pH 7.29, of eight determinations on diseases other than carcinoma it was 7.33, and of twenty-three determinations on carcinoma patients it was pH 7.34. It is concluded from these results that there is no evidence of an actual decrease in H ion concentration of the blood in carcinoma which can be related primarily to the cancer. In normal bloods the colorimetric determination of the pH of the dialysate at 20° C. agreed within experimental error with the pH of the venous blood at 38° C., calculated from the CO_2-bicarbonate ratio.

Mechanism of Phlorrhizin Diabetes.—Thomas P. Nash, Jr., and Stanley R. Benedict (*Journal of Biological Chemistry,* April, 1923) produced a hyperglycemia maintained for six hours or longer in phlorrhinized dogs, and a quantitative excretion of the dextrose fed was noted. They believe that phlorrhizin does produce an intrinsic impairment of utilization of sugar by the tissues, not only of the kidney, but all other metabolizing tissues also. A mixture of dextrose and urea was ingested by the phlorrhizinized dogs, the sugar being more rapidly excreted in the urine than the urea, which is a result comparable to that observed by feeding meat and proteins to dogs.

Experimental Kidney Lesions in Rats.—In producing kidney lesions in rats by diets defective only in that they contained excessive amounts of proteins, L. M. Polvogt, E. V. McCollum and Nina Simmonds (*Bulletin of the Johns Hopkins Hospital,* May, 1923) fed young rats on diets, the protein content of which varied from 31 to 41.3 per cent. Aside from this high protein content all the diets were well constituted. When the animals were between 250 and 400 days old they were killed and autopsied. All the rats on the high protein diet had kidney lesions of considerable severity. The kidneys were large and apparently hemorrhagic. Microscopical examination showed marked congestion. The outstanding feature was the formation of large numbers of hyaline casts and the intense congestion. Apparently no cause other than the excretion of excessive amounts of the end products of protein metabolism was responsible for the renal damage described.

Treatment of Auricular Fibrillation by Quinidine Sulphate.—J. G. Emanuel (*Lancet,* May 26, 1923) follows the original doses recommended by Frey, viz., 0.4 gram (approximately six grains), given in capsules by mouth. One dose is given the first day, two the second, three the third, and so on till a maximum of ten doses may be reached. This large number, however, is rarely necessary, the majority of the patients being restored on the second, third, or fourth day. The dose is repeated every two hours and it is convenient to give the initial dose at 5 a. m., so that on the fourth day of administration, for example, the patient has a capsule at five, seven, nine, and eleven o'clock in the morning. The pulse is reported hourly, and if necessary the nurse is instructed to estimate the ventricular rate from the apex beat. She records not only the rate, but also the rhythm, adding the word regular or irregular to the pulse chart. The quinidine is discontinued as soon as a regular rhythm is noted, and the patient, who has been kept in bed during the administration of the drug, is allowed up on the following day. Electrocardiograms are taken as controls as often as may be found necessary. No rhythm is accepted as sinus rhythm without confirmation by the electrocardiograph. It is important that the intervals between successive doses of quinidine should be short, as it is rapidly eliminated. It is undesirable to give digitalis and quinidine at the same time. Rest in bed and digitalis must first bring about such an improvement in the degree of heart failure that no further benefit can be obtained from the digitalis. Digitalis is a specific remedy and quinidine an invaluable coadjutor in the treatment of cardiac failure with auricular fibrillation.

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Cavalier Dr. Enrico Ballerini, *Late Surgeon to the Hospital of Rome, Italy:* "I have used VALENTINE'S MEAT-JUICE in the treatment of patients, and also personally, after having been very ill with Influenza, and I must say it is an excellent tonic in conditions of great organic weakness. It is also very agreeable. I have prescribed it with the greatest satisfaction for convalescents and invalids restricted to a liquid diet."

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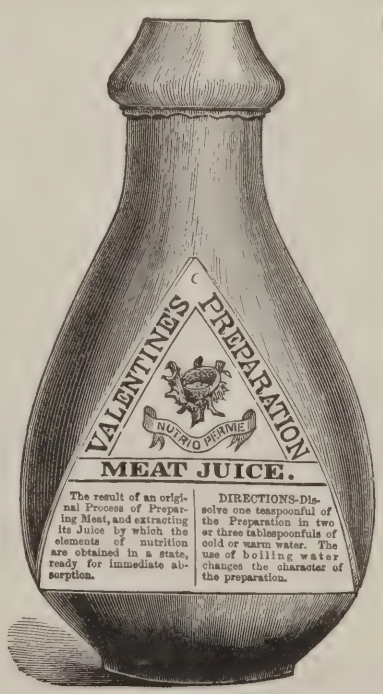
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The result of an original Process of Preparing Meat, and extracting its Juice by which the elements of nutrition are obtained in a state, ready for immediate absorption.
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MISCELLANY.

Acute Industrial Mercurial Poisoning.—As a result of his experiences Max Winkler (*Schweizerische medizinische Wochenschrift,* August 19, 1923) comes to the conclusion that wherever industrial plants, in which mercury is used, are built, care should be taken to supply, in the first place, plenty of fresh air and good ventilation. The mercury should be kept in closed spaces, as it evaporates even at the ordinary temperature. The floors should be covered with a thick layer of lead, so that any spilled mercury can roll off and be collected below. The entire distillation apparatus should be airtight. Workmen should change their clothes on leaving the workshop; they should wash their hands and face and they should practise careful oral hygiene, which should consist of washing the mouth with alum (which is the cheapest remedy) and brushing the teeth and the gums. Carious teeth should be removed or their cavities should be filled. Smoking should be restricted to a great extent and the chewing of tobacco should be avoided.

Antiseptic Action of Some Benzyl Compounds.—David I. Macht and Justina H. Hill (*Bulletin of the Johns Hopkins Hospital,* May, 1923) made a bacteriological study of benzyl alcohol, benzaldehyde, benzyl benzoate, benzyl acetate and a number of natural pharmacological compounds containing benzyl bodies, such as benzoin, balsam of peru, oil of cajuput, and a number of others. Cultures of Staphylococcus pyogenes aureus were exposed to the action of the various drugs at different time intervals, as one minute, one, three, and five hour exposure. Dilutions of the drugs were made with sterile cottonseed oil. Benzyl alcohol, even when diluted with oil, exhibits definite antiseptic properties. Every one of the compounds examined showed a definite germicidal and antiseptic effect. This bactericidal property of the benzyl compounds throws light on the beneficial results following the use of tincture of benzoin in the form of inhalations in the treatment of sore throat, and in various lotions and skin preparations. The antiseptic power of benzaldehyde and benzyl alcohol was found to be much greater than that of other drugs used by laryngologists, such as guaiacol and menthol.

Lymphangitic Abscess of the Neck.—P. Clairmont (*Schweizerische medizinische Wochenschrift,* May 3, 1923) describes the occurrence of a typical abscess which occurs in the lower anterior portion of the neck, in the paries anterior triangle, between the thyroid gland and the sternocleidomastoid muscle, beneath the middle fascia of the neck (cervical aponeurosis) and therefore dorsal to the small muscles of the neck, which should be considered as a lymphangitic abscess. It may develop from various causes. Clinically it resembles suppurative thyroiditis. With incision the prognosis is favorable. The anatomical conditions responsible for its development are the course of the lymph tract with the bloodvessels, the arrangement of the lymph nodes, the crossing of the omohyoid muscle of the common jugular vein and the associated fascial relationships. It is still undetermined whether an enlargement of the thyroid lobes on the diseased side plays any important part in the development of the abscess.

Corpus Luteum Cysts and Persistent Corpus Luteum.—L. Fraenkel (*Zentralblatt für Gynäkologie,* August 5, 1922) shows the great clinical significance of corpus luteum cysts as the cause of extensive perimetritides and functional abnormalities, such as amenorrhea, hemorrhages and sterility. This disease picture is the analogue of the persistent corpus luteum of animals. The cysts are usually flaccid and give a feeling of diffuseness. If amenorrhea or an apparently premature menstruation has preceded and if blood is aspirated from the cyst, it may be confused with extrauterine pregnancy. Small, movable cysts, occurring in tubal pregnancy, arise from the corpus luteum verum and retrogress with the pregnancy, just as do the multilocular cysts in hydatidiform mole.

Almost every form of inflammation about the genitals leads to corpus luteum cyst formation; they are often associated with myomata. Sensitive, enlarged adenxa, which are not due to plainly palpable tubal swellings or to microcystic degeneration of the ovaries, are almost always corpus luteum cysts. Tubal swellings are usually complicated by these cysts and tuboovarian abscess is usually due to secondary suppuration of the cystically degenerated corpus luteum. Isolated ovarian abscesses are always localized in the corpus luteum.

The etiology is frequently uncertain; gonorrhea is often no etiological factor. The corpus luteum hormone, probably, produces irritation in the peritoneum surrounding the cyst and the inflammatory character of the disease. Bacteria are usually absent in the cysts; there is no fever, but there are severe pains, radiating into the legs, back, hips and sciatic nerve. The adhesions are frequently dense and firmly attached. The chief symptoms are absent or premature menstruation and severe hemorrhages. A true corpus luteum persistens, as seen in cattle, rarely occurs in women, but the cysts, originating from the last corpus luteum, are unusually common. Inasmuch as a subsequent development of the corpus luteum is always absent, this condition is probably the equivalent of the corpus luteum persistens. These cases are also associated with another important symptom—primary or acquired sterility and, more rarely, habitual abortion. Sterility may occur also with a patent corresponding tube or noninvolvement of the adnexa of the other side. Conception occurs rarely because the corpus luteum cyst prevents subsequent ovulation or the normal embedding of the ovum.

The treatment is always laparotomy; curettage and the resorption treatments are ineffective. The proper procedure is enucleation of the cyst and resection or extirpation of the ovary. The digital nonoperative rupture is condemned. The laparotomy discloses the cause of the sterility—corpus luteum cyst, agglutination of the tubal fimbriæ and the ovary buried in sacs of adhesions. The author practises curettage of the tubal mucosa with a small curette; also a transverse incision in the fundus with opening of the uterine cavity, salpingectomy, tunnelling of the cornua uteri, and implantation of the healthy tube from another woman, operated on simultaneously for prolapse; the excised tube is freed from the peritoneum in the position nearest the median line and implanted from the uterine cavity outward.

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Cleanliness, digestibility, and palatability are also of importance, but without nutritive value any food would be useless as a body builder.

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Actinomycosis.—W. W. Mattson (*Surgery, Gynecology and Obstetrics,* April, 1922) concludes as follows:

1. There is but one true species of microorganism capable of producing actinomycosis in man and lower animals and this is the one isolated by Wolff and Israel and later more fully described by Wright. 2. There is no convincing clinical evidence supporting the theory that this organism is a normal inhabitant of the oral cavity and gastrointestinal tract of man. 3. There is much clinical and biological evidence that this microorganism has its source outside of the human body and is capable of a dual existence: first as a saprophyte in old sod soil from which it gains access to grains and grasses and through this medium or intermediary host so to speak, it becomes capable of infecting man and lower animals. 4. In order that infection may take place two things are necessary: first, an abrasion of the tissues: second, the fungus must in some way be brought directly in contact with this abrasion. 5. Animal to man infection is far more common than we have been led to believe it was by earlier investigators. 6. Human actinomycosis is not a rare disease, but a disease which is often overlooked or incorrectly diagnosed. 7. Every inflammatory swelling of chronic or subacute nature with persistent and recurring sinus formation should be carefully investigated for this disease. 8. A negative smear, on first examination, does not rule out infection, as the fungus, in the presence of mixed infection, is often very difficult to find. 9. The disease should always be kept in mind in every case of atypical pulmonary tuberculosis and should be looked for in cases with chronic purulent bronchitis or bronchiectasis. 10. Early treatment of superficial lesions are highly successful. Internal infections are extremely fatal and hopeless.

Dried Milk.—Timothy Leary (*Boston Medical and Surgical Journal,* May 4, 1922) quotes from the British report:

"The physical and chemical changes produced by the processes used in the preparation of dried milk so alter its character that it is better borne by the infant's stomach than ordinary cow's milk, whether raw, boiled or sterilized. The dried milk is easily and completely assimilated. It is palatable. Millard says the babies like it and do not relish any change. The effect on nutrition is very marked. Where weight charts have been kept regularly, they show a steady advance, and the child's flesh is firm and solid, not flabby, and the general tone and condition good."

He goes on to say that little argument is needed to demonstrate the advantages which should arise from the elimination of the substance, i. e., water, which gives to milk its perishable quality.

Hygienically, the milk borne epidemic, either originating from the milk as drawn *a,* or from contamination during handling *b,* should be done away with. The drying process should eliminate the organisms, such as streptococci, producing the first form of epidemic. The second form, as illustrated by typhoid, is dependent upon the multiplication of the original contaminating dose of bacilli in the fluid milk. The drying of the product makes improbable the successful multiplication of the bacteria or their wide distribution throughout the product.

Economically, all of the emergency procedures which are necessary in the handling of liquid milk would be done away with, refrigeration, special cars, breakable special containers, and most of all special delivery.

A hidden cost of milk, which does not appear in the lists of costs submitted, arises from the public inspection of the sources of supply, and the further laboratory investigation of the quality and cleanliness of milk as delivered. This latter cost, necessitated largely by the tendency of milk to deteriorate in handling, could be in part done away with if the use of powdered milk were universal. The only inspection necessary would be the inspection at the source, and this could be made more rigid for less money than is now expended for the present double inspection, i. e., at the source and at the point of delivery.

The development of the present day apparatus for milk drying along indicated lines should make it possible for milk producers, individually, or in groups, to powder their own milk at the source, thus becoming independent, to a degree, of seasonal demands, and this should cheapen the price of milk to the consumer.

Aesthetically, the rumble and reverberation of the milk wagon in its nightly disturbance of the peace would be abolished, to the joy of the insomniac, and the better rest of the deposed milk driver and his family.

An important drawback to the universal use of milk powder is its price. It costs today, at retail, apart from the trouble of its preparation, more than liquid milk. When one considers the cost of the emergency features in the handling of liquid milk, which do not enter into the cost of powdered milk, one is puzzled to account for its retail price, seventy to seventy-nine cents a pound, and further puzzled when one learns that the same milk powder sells in barrel lots at thirty-three to thirty-five cents a pound. Milk powder is slightly hygroscopic, and for retail purposes has to be put up in tin, but the cost of a tin container does not markedly add to the cost of most food products. It is possible that introductory advertising is an important factor in elevating the price. If so, wider use and competition should serve as correctives.

The Facies of Heredosyphilis, With Comment on Its Possible Embryogenesis and Its Confusion With Oxycephaly and Congenital Ectodermal Defect.—John H. Stokes (*The Medical Clinics of North America,* July, 1923) believes that the facies of heredosyphilis is most conveniently regarded, in the absence of definite knowledge of the underlying developmental mechanism, as the result of a twist or embryonal dysplasia, the result of the syphilitic intoxication perhaps, rather than of the spirochetal invasion of the affected tissues as such. It should, therefore, be distinguished from the deformities induced by gummatous osteitis of the nasal and cranial bones. The value of the facies in affording a clue to a heredosyphilitic factor in a variety of conditions in childhood and adult life should be better appreciated, but due precaution should be used in the interpretation of this element in a diagnosis. The possibility of confusion with the clinical picture of mild grades of oxycephaly and with the facies of congenital ectodermal defect should be borne in mind.

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Miscellany.

Functional Elongation of the Thigh.—O. Frisch (*Wiener klinische Wochenschrift,* July 26, 1923) states that in order to relieve a shortening of the femur of a severe grade in an existing ankylosis of the hip, the oblique osteotomy with a subsequent extension is not sufficient and an attempt must be made to make the healing of the osteotomy wound take place in a degree of abduction commensurate with the shortening, whereupon the shortening is functionally corrected by the obliquity of the pelvis. The angle of abduction necessary to obtain this correction may be calculated from the existing shortening, the width of the pelvis and from the length of the thigh. The variations in the calculation dependent upon the physiological variations of this measurement are so slight (except in special conditions) that the same scheme may be used for all adults. On the basis of this finding, it may be said that one cannot go wrong in selecting about double the amount of abduction as the shortening amounts to in centimetres. The scoliosis of the lumbar portion of the spine necessary therefore as a result of physiological limits allows at the most an obliquity of the pelvis which corresponds to an abduction of the leg of 35°, whereby a shortening of fifteen cm. may be corrected. This functional elongation of the leg as a result of the obliquity of the pelvis may be combined as a secondary procedure with the extension after oblique osteotomy.

Blood Grouping and Its Clinical Applications: With a Simple Method of Group Determination.—S. C. Dyke (*Lancet,* March 25, 1922) states that it has been proved that two agglutinable substances (A and B) reside in the corpuscles and two corresponding agglutinins reside in the sera (a and b) and that the active agglutinin in a given red cell is never normally present in the serum associated with that cell, and conversely, that the agglutinin opposite in sign to that of the red cell is always present in the serum of that blood. There are four groups, called groups i, ii, iii and iv, of which group iv is the socalled universal donor, and members of this group can receive blood only from a member of this group; group i is the socalled universal recipient; groups ii and iii can act as donors only within their own group or group i and can receive blood only from members of their own group or group iv. This grouping simplifies the selection of donors. In practice a number of group iv donors should always be available.

The determination of the blood group of any individual may be done in a few minutes, requiring only the possession of known group ii and group iii sera and the testing of the red cells (agglutination). Corpuscles agglutinated by both group ii and group iii sera belong to group i; those agglutinating group iii sera but not group ii, belong to group ii; those agglutinated by group ii sera but not by group iii sera belong to group iii, and those agglutinated by neither group ii nor group iii sera belong to group iv. The simplest technic is to divide a glass slide into halves by a grease pencil, marking one half ii and the other iii and placing a small drop of blood on each half; a large drop of known group ii serum is dropped on the half marked ii and the blood is mixed; the same procedure is followed with a known group iii serum. The slide is occasionally agitated and read off after fifteen minutes by the naked eye.

The principal clinical application of blood grouping is in the field of blood transfusion; it has been recommended also for the selection of donors in skin grafting and in medicolegal cases: 1, in narrowing down the possibilities of individuals from whom a given sample of blood may have originated and 2, in the determination of paternity.

Further Observations of the Pharmacology of Benzyl Compounds.—Carl Nielsen and John A. Higgins (*Journal of Laboratory and Clinical Medicine,* July, 1922) as a result of their continued studies on benzyl compounds report the following conclusions: Their observations suggest that the relaxing power of benzyl esters on the smooth muscle fibres of the intestine as a rule is dependent upon the benzyl content and upon the rate of hydrolysis of the benzyl compound. In all cases where successful comparative records were obtained, with the exception of those of benzyl salicylate and benzyl acetylsalicylate, the higher the rate of hydrolysis, the greater the efficiency proved to be. Benzyl fumarate was more efficient than benzyl succinate, especially in regard to initial action; the succinate was more efficient than the stearate, the acetate more powerful than the cinnamate, and the latter was of higher efficiency than the benzoate. The high relaxing power of benzyl salicylate and benzyl acetylsalicylate, in spite of their slow rate of benzyl hydrolysis, may be attributed to their intact molecules. These compounds differ from other benzyl esters in that their molecules contain hydroxyl or substituted hydroxyl groups. The benzyl acetylsaliciylate is more efficient as an intestinal relaxant than the salicylate, in fact it is more powerful than any of the benzyl esters investigated. Various benzyl compounds other than benzyl esters, namely benzyl phenolate, benzyl ethyl ether, and monobenzyl barbituric acid, as well as benzaldehyde, were also found to possess smooth muscle relaxing properties.

Effects of Excess of Calcium on the Skeleton.—As a result of his experiments, V. Korenchevsky (*British Medical Journal,* May 12, 1923) draws the following conclusions: 1. Butter bought in the winter may contain a considerable amount of the antirachitic principle. 2. When the amount of calcium in a normal diet containing eight per cent. butter and two per cent. codliver oil was increased two or three times, the calcification of the skeleton was either not increased at all or only slightly. 3. The ingestion of even very large quantities of calcium did not cure the rachitic calcium impoverishment of the skeleton of rats on a diet deficient in the fat soluble factor. 4. When the exhaustion of the fat soluble factor in the body of rats is not complete, an excess of calcium in diets deficient in fat soluble factor may in some cases slightly increase the amount of calcium in the skeleton, though never sufficient to make the calcification normal. 5. On the basis of the data of the chemical and histological examination, the skeletal affections in rats on a diet must be classed in the group of rachitic affections, which develop even with an excess of calcium in the diet.

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Rubella Without a Rash (Rubella Sine Exanthemate).—According to the observations of G. Flöystrup (*British Journal of Children's Diseases,* January-March, 1923), cervical and occipital adenitis is a very frequent phenomenon in rubella (while the glands in measles are swollen much less frequently and in a much slighter degree). The enlargement, therefore, must be regarded as of much greater diagnostic importance than is supposed by most authors. The adenitis is all the more valuable diagnostically as it appears about a week before the rash, and so permits the diagnosis of rubella, though not with complete certainty, and thereby perhaps hinder the spread of the disease. The possible occurrence of rubella without a rash is mentioned in the literature for the first time.

Causes of Stillbirths and Neonatal Deaths.—Harold Bailey (*Archives of Pediatrics,* April, 1923) found that the fetal mortality of childbirth is due to several causes but prematurity stands foremost with trauma due to dystocia as a close second. As the deaths from prematurity occur in the antenatal, intranatal, and neonatal periods, the present methods of prenatal service can be of very little use. The causes of premature emptying of the uterus should be investigated by the trained biochemist and the internist. Possibly a low grade toxemia causes degeneration of the placenta and is thus the origin of the trouble. Premature infants do not stand operative trauma and in all abnormal deliveries this should be taken into consideration. The postnatal care of those who survive should be placed in the hands of competent obstetricians. In the author's series of cases, syphilis was not a common cause of stillbirth or death during the first month of life. Abortions and miscarriages should be separated in the health reports from those deaths that occur after the period of viability and the weight and length of the fetus should be the determining factor.

Köhler's Disease of the Tarsal Scaphoid.—H. B. Greenwood, (*Lancet,* August 11, 1923) maintains that no real causa causans emerges from a theory of dystrophy or delay in ossification later stimulated to osteogenesis by trauma. Indeed, a history of trauma could probably be obtained in every case by careful and persistent investigation, especially if the period inquired into is allowed to stretch as far back as two years before the detection of the disease, and to include injury of any degree of severity. The author believes that in a child the subject of a latent mild tuberculous infection there is lighted up (possibly by an injury of moderate severity) a smouldering tuberculosis of the scaphoid bone of the foot, the bone which, the keystone of an arch, is most subject to strain, stresses, and blows. The early stage, evidenced by a rarefying osteitis, gives rise to such trifling clinical signs that no complaint is made, no x ray examination carried out and the disease escapes recognition. Should the disease progress and spread to neighboring bones the case is diagnosed as a frank tuberculosis of the tarsal bones. But should resolution occur and a reparative sclerosis take place, either no diagnosis other than sprain or incipient flatfoot is made, or an x ray examination is made, and the condition found is called Köhler's disease. It is natural then that recovery should always occur since the disease is already recovering when detected.

New Publications Received.

(We shall publish in future full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested).

FORTUNE'S FOOL. By Rafael Sabatini. New York: Houghton Mifflin Co., 1923.

THE PHARMACISTS' BOTANY. By George B. Rigg, Ph.D., New York: The Macmillan Co., 1924.

SCEPTICISM AND ANIMAL FAITH. By George Santayana. New York: Scribner's Sons, 1923.

THE SOUL OF KOL NIKON. By Eleanor Farjeon. New York: Frederick A. Stokes, 1923.

HEREDITY AND EUGENICS. By R. Ruggles Gates, Ph.D. New York: Macmillan, 1923.

HEALTHY CHILDREN. By S. Josephine Baker, M.D., D.P.H. Illustrated. Boston: Little, Brown & Co., 1923.

MOVEMENT IN ORGANIC DISEASE. By Ernest Kingscote, M.B., C.M., Edin. New York: William Wood & Co., 1924.

HEALTHY MOTHERS. By S. Josephine Baker, M.D., D.P.H. Illustrated. Boston: Little, Brown & Co., 1923.

THE BIRTH OF PSYCHE. By L. Charles-Baudouin. Translated by Fred Rothwell. New York: E. P. Dutton & Co., 1923.

MINOR MALADIES AND THEIR TREATMENT. By Leon Williams, M.D. Fifth Edition. New York: William Wood & Co., 1923.

LEHRBUCH DER KINDERHEILKUNDE. Von Arzte und Studierende. Eighth Edition. Berlin: Urban & Schwarzenberg, 1923.

THE EVOLUTION OF THE CONSCIOUS FACULTIES. By. J. Varendonck, D.Litt., D.Sc. New York: The Macmillan Co., 1923.

THE CHEMICAL BASIS OF GROWTH AND SENESCENCE. By T. Brailsford Robertson. Philadelphia: J. B. Lippincott Co., 1923.

KORPERBAU UND MENSCHWERDUNG KONSTRUKTIONSPLANE. Von Dr. Med. Max Von Arx. Leipzig: Verlag Ernst Bircher, 1922.

STUDIES IN MENTAL DEVIATIONS. By S. D. Porteus. Publication of the Training School at Vineland, N. J., Department of Research, 1922.

HIPPOCRATES AND HIS SUCCESSORS IN RELATION TO THE PHILOSOPHY OF THEIR TIME. By R. O. Moon, M.A., M.D., F.R.C.P. New York: Longmans Green, 1923.

THE PRIMARY PROBLEMS OF MEDICAL PSYCHOLOGY. By Dr. Ch. de Montet. Translated by A. Newbold. New York: William Wood & Co., 1923.

BLOOD CHEMISTRY COLORIMETRIC METHODS. By Willard J. Stone, M.D. Introduction by George Dock, M.D. New York: Paul B. Hoeber, Inc., 1923.

INDUSTRIAL HEALTH. Edited by George M. Kober, M.D., LL.D., and Emery R. Hayhurst, M.D., Ph.D. Philadelphia: P. Blakiston's Son & Co., 1924.

SELECTED ESSAYS ON ORTHOPEDIC SURGERY. From the writings of Newton Melman Shaffer, M.D., F.A.C.S. Illustrated. New York and London: G. P. Putnam's Sons, 1923.

INTERNATIONAL CLINICS. Edited by Henry W. Cattell, A.M., M.D., with collaboration. Vol. IV. 33rd Series, 1923. Philadelphia and London: J. B. Lippincott Co., 1923.

CHARLES WHITE OF MANCHESTER (1728-1823) AND THE ARREST OF PUERPERAL FEVER. By J. George Adami, C.B.E., M.D., F.R.S. New York: Paul B. Hoeber, Inc., 1923.

REPORT FROM PATHOLOGICAL DEPARTMENT AND DEPARTMENT OF CLINICAL PSYCHIATRY OF CENTRAL INDIANA HOSPITAL FOR INSANE. Vol. VIII. Indianapolis: Wm. B. Burford, State Printer, 1923.

A COMBINED TEXTBOOK OF OBSTETRICS AND GYNECOLOGY. By J. M. Munro Kerr, M.D., James Haig Ferguson, M.D., James Young, M.D., and James Hendry, M.B. Edinburgh: E. & S. Livingstone; New York: William Wood & Co., 1923.

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—a great many patients—especially the weak and debilitated—need to be fortified against the depressing effects of cold weather, and for this purpose probably no remedy is more widely employed by physicians of experience than

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Miscellany.

Clinical Studies on Insulin.—Nelson G. Russell, Byron D. Bowen and George W. Pucher (*Bulletin of Buffalo General Hospital,* April, 1923) report on the treatment of six cases of rather severe diabetes with iletin. The results obtained appear to be in accord with other investigations and suggest the possession of another means of managing these cases in addition to the restriction of diet, especially in the severe cases in which dietary treatment alone is unsatisfactory and often useless. This study does not give convincing information on the proper time of administration with relation to meals or on the number of daily doses resulting in the most economical use of the extract. These points possibly differ in individual cases and require further investigation. The tolerance was quite definitely increased in one case and slightly so in another, but if these patients had received dietary treatment prior to the administration of iletin, an increased tolerance might not have been effected. It may be futile to determine the total glucose-iletin ratio, but in this series of cases the ratio appears to be quite constant—two to three grams of glucose equals one unit of iletin. There were no reactions or untoward results, which is attributed to the following: 1. Iletin appears to be a carefully standardized, biological product. 2. The cases were all severe. 3. Care was taken to keep the blood sugar well above normal. One patient was twice restored to consciousness from deep diabetic coma by the use of iletin. The effects of iletin upon the utilization of glucose is striking.

The Modern Treatment of Congenital Syphilis and Its Results.—J. Bernheim-Karrer (*Schweizerische medizinische Wochenschrift,* July 19, 1923) states that with salvarsan-mercury treatment, the affections of the skin and mucous membranes are healed the quickest of all. With enlargements of the liver and spleen the results are just as rapid. Palpable cubital lymph nodes frequently persist in spite of a negative Wassermann reaction. These may be the result of infections on the fingers. Recurrences of the skin and mucous membranes may appear after the first course of treatment. Neuroretinitis does not always disappear after specific treatment. Renal complications, in contrast to their occurrence in adults, are no contraindication to the salvarsan or mercury treatment. If possible, the salvarsan is injected into a vein of the head, but never into the longitudinal sinus because of the danger of necrosis; if this is impossible, it is injected into the gluteal musculature. The rule now followed, is to begin with 0.015 gram of neosalvarsan. This dose may under certain circumstances be increased to double this amount. No harmful results were seen to follow this dosage. This antisyphilitic treatment is interrupted temporarily only in the occurrence of an acute intercurrent disease, such as grippe or a severe disturbance of nutrition. Calomel is never given in larger doses than 0.001 gram per kilogram of weight and usually no more often than once a week. Calomel produces infiltration and the resulting danger of poisoning from subsequent sudden resorption of mercury much more often than does salvarsan.

Artificial Glycosuria From the Ingestion of Sugar in Pregnancy.—Albert W. Bauer (*Zentralblatt für Gynäkologie,* September 2, 1922) concludes that although the artificial glycosuria following the ingestion of glucose cannot be used as a sign of differential diagnosis between extrauterine pregnancy and tumor of the adnexæ, nevertheless, its value as a sign of the early diagnosis of pregnancy cannot be denied. In a series of two hundred patients, the sugar content of the blood, following the administration of one hundred grams of glucose on a fasting stomach and during rest in bed, increased, on an average, from 0.08 to 0.3 per cent. The urine was tested every ten minutes for one hour and at two successive intervals of thirty minutes. Of the women studied, thirty were not pregnant, one hundred and twenty were pregnant for three months, and fifty were in other stages of pregnancy. All of the women that were pregnant for less than three months showed pronounced glycosuria, whereas the glycosuria appeared only in sixty-six per cent. of the other pregnant women and only in one of the thirty nonpregnant women. Spontaneous glycosuria was found only in 0.75 per cent. of three hundred other pregnant women examined and the sugar content of the blood of the latter was within normal limits.

Treatment of Rheumatism With Thyroidine.—Santiago Libarona Brian (*Revista de la Asociacion Medica Argentina,* July, 1923) has ceased to prescribe sodium salicylate in the acute period of rheumatism, employing only thyrodine in daily increasing dosage, beginning with six centigrams and going up to eighteen centigrams at each injection in adults. Thyroidine thus administered in maximum doses gave rapid results except in nervous individuals where the drug increased the nervousness, made them irritable and caused sweating, thus preventing the continued use of large doses. Nevertheless even these cases ultimately responded to the thyroidine treatment.

Therapy of Chronic Arthritides.—Carl Reitter (*Wiener klinische Wochenschrift,* April 9, 1923), calls attention to the necessity of considering the joints less as a circumscribed and independent group of organs of a mechanical nature than as a coordinated portion of the organism, dependent on constitutional conditions. This applies particularly to the chronic polyarthritides and the predominant significance of the connective tissue in all the pathologic processes in the joints. In addition to the previous infections special investigation should be made concerning the endocrine relationships (the ovary, thyroid gland and others), and these usually call attention to a line of treatment that promises success.

Chondrodystrophy and Pregnancy.—E. Wehefritz (*Zentralblatt für Gynäkologie,* March 31, 1923) asserts that, according to the modern teachings of heredity, chondrodystrophy is hereditary and therefore the mother should be sterilized after delivery by Cæsarean section, especially in the delivery of a healthy child. If chondrodystrophy can be diagnosed in the fetus röntgenographically by the method of Warnekros during the sixth to the seventh month of pregnancy, interruption of the pregnancy is indicated.

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Skin Affections of the Climacterium.—Robert Bauer (*Zentralblatt für Gynäkologie,* February 3, 1923) thinks that pruritus in the genital region or occurring diffusely over the body, even in the form of eczema, may be due to a disturbance of internal secretion and the decomposition of toxic products. The author was led to this conclusion by the results of successful organotherapy in several cases with ovarian preparations.

Cupping Glass Treatment of Chronic Gonorrhea in the Female.—Matzenauer and Hans Weitgasser (*Wiener klinische Wochenschrift,* November 30, 1922) report good results with the use of the usual Bier suction cup (without any indentation, so that it may be easily removed from the portio vaginalis), to which a thick glass tube about ten cm. long is attached. The suction is continued for fifteen minutes to one hour and after that a tampon with some antiseptic powder is introduced. This procedure causes the gonococci to disappear in a very short time in cases of uncomplicated cervical gonorrhea. It is contraindicated in all cases in which the uterus is the seat of an acute process.

Additional New Symptoms of Fissura Ani.—K. Svehla (*Monatsschrift für Kinderheilkunde,* March, 1923) asserts that the subjective symptoms of anal fissure may be variegated and even bizarre and so different from the symptoms usually mentioned that they may lead to a false diagnosis. He calls particular attention to: 1, general emaciation; 2, pains referred to different parts of the body, not excluding the teeth, but particularly localized in the region of the liver and cecum; 3, diarrheas alternating with constipation; 4, psychic excitability alternating with changes in disposition, particularly a bad disposition; 5, spasmodic attacks resembling, particularly, epilepsy. The observation of such symptoms leads to the view that the examination of the rectum is important even when the symptoms do not apparently originate in the rectum. Of the objective symptoms, not all are equally pronounced: the pain on defecation is not always present and bleeding during and after defecation does not occur in every case. A constant and never failing objective symptom of anal fissure is the intense pain which results from the digital examination of the rectum and traction on the mucosa of rectum. In children rectoscopy may be difficult and misleading as the fissure may be hidden in folds of rectal mucosa.

Treatment may be instituted from three directions: 1, correction of the anemia, as by cauterization of the fissure, but this is painful and leads to a cure very slowly; 2, the elimination of the occurrence of a marked muscular contraction to avoid anemia, as by forcible rupture of the sphincter; 3, the elimination of the pains as a cause of the reflex spasmodic contraction of the sphincter and the other results. For the latter purpose, the author as a rule gives calomel in divided doses (no more than 0.03 gm. a dose); if three doses are not followed by stools, an enema is given. As soon as it is believed that no more evacuations will occur, a cocaine suppository, 0.1 gm., is inserted into the rectum during the afternoon or evening. On the next morning a second cocaine suppository is inserted. The procedure of the preceding day is repeated at night. In most cases ten suppositories will not be required.

New Publications Received.

(We shall publish in future full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested).

FANTASTICA. By Robert Nichols. New York: The Macmillan Co., 1923.

ABERRATIONS OF LIFE. By J. C. McKerrow, M.B. London: Longmans Green & Co., 1923.

CLINIQUE MEDICALE DE L'HOPITAL BEAUJON. Par Ch. Achard. Paris: Masson & Co., 1923.

ENTRETIENS DERMATOLOGIQUES. Par R. Sabouraud. Second Edition. Paris: Masson & Co., 1923.

BIRDS, BEASTS AND FLOWERS. Poems. By D. H. Lawrence. New York: Thomas Seltzer, 1923.

ORAL HYGIENE. By Sim Wallace, D.Sc., M.D., L.D.S. London: Ballière, Tindall & Cox, 1923.

A THEORY OF KNOWLEDGE. By Charles Augustus Strong. New York: The Macmillan Co., 1923.

MEMORIES OF THE RUSSIAN COURT. By Anna Viroubova. New York: The Macmillan Co., 1923.

PHYSICAL DIAGNOSIS. By Richard C. Cabot, M.D. Eighth Edition. New York: William Wood & Co., 1923.

A PHILOSOPHY OF LIFE AND ITS SPIRITUAL VALUES. By Alfred W. Martin. New York: D. Appleton & Co., 1923.

THE SMOKE INSPECTOR'S HANDBOOK. By Herbert G. Clinch, M.R., San. I., M.I.H. London: H. K. Lewis & Co., 1923.

HANDBOOK OF SURGERY. By George L. Chiene, M.B., C.M., F.R.C.S. (Ed.). New York: William Wood & Co., 1923.

CARE OF THE BABY. By J. P. Crozer Griffith, M.D. Seventh Edition. Philadelphia and London: W. B. Saunders Co., 1923.

THE MEMOIRS OF LI HUNG CHANG. By W. F. Mannix. With an Introduction by Ralph D. Paine. New York: Houghton Mifflin Co., 1923.

OPHTHALMIC SURGERY. By Dr. Josef Moller. Edited by William M. Sweet. Third Edition. Philadelphia: P. Blakiston's Son & Co., 1923.

HANDBUCH DER GESAMTEN TUBERKULOSE-THERAPIE. Von Prof. Dr. med. Ernst Loewenstein. Band II. Berlin: Urban & Schwartzenberg, 1923.

AN INTRODUCTION TO THE STUDY OF MENTAL DISORDERS. By Francis M. Barnes, Jr., M.A., M.D. Second Edition. St. Louis: C. V. Mosby Co., 1923.

INFECTION IMMUNITY AND BIOLOGIC THERAPY. By John A. Kilmer, Dr.P.H., M.D., D.Sc. (Hon.) Philadelphia and London: W. B. Saunders Co., 1923.

HANDBUCH DER NEUROLOGIE DES OHRES. Von Prof. Dr. G. Alexander und Prof. Dr. O. Marburg. L. Bande, 1 Halfte. Berlin: Urban & Schwartzenberg, 1923.

FOLKLORE IN THE OLD TESTAMENT. By Sir James George Frazer, F.R.S., F.B.A., Hon. D.C.S., Hon. Litt.D. Abridged Edition New York: The Macmillan Co., 1923.

A CLINICAL GUIDE TO BEDSIDE EXAMINATION. By Dr. H. Elias, Dr. N. Jagic and Dr. A. Luger. Translated by Wm. A. Brams, M.D. New York: Rebman Co., 1923.

DIAGNOSIS AND TREATMENT OF ACUTE ABDOMINAL DISEASES. By Joseph E. Adams, M.B., M.S. Lond., F.R.C.S. Eng. Second Edition. New York: William Wood & Co., 1923.

THE EVOLUTION AND PROGRESS OF MANKIND. By Prof. Hermann Klaatsch, M.D. Edited by Adolf Heilborn, M.D. Translated by Joseph McCabe. New York: Frederick A. Stokes, 1923.

PULMONARY TUBERCULOSIS—ITS DIAGNOSIS AND TREATMENT. By John Guy, M.D., D.P.H. (Camb.), F.R.F.P. & S. (Glas.), F.R.C.P. (Edin.). Edinburgh and London: Oliver & Boyd, 1923.

ENDOCRINE DISEASES. Including Their Diagnosis and Treatment. By Wilhelm Falta. Translated by Milton K. Meyers. Third Edition. Philadelphia: P. Blakiston's Son & Co., 1923.

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Miscellany.

Extrasensorial Channels of Knowledge.—Charles Richet (*Lancet,* September 8, 1923) endeavors to show by means of experiments that a knowledge of reality may be obtained through other means than that of the ordinary five senses. He proposes the new name of metapsychics for this new science and divides it into two separate groups: 1, subjective metapsychics, which has reference only to the phenomena of consciousness, and 2, objective metapsychics, which has reference to the external phenomena which are not explainable by the ordinary laws of mechanics. Four explanations are offered: 1, defective or fraudulent observations, but even of these fifty per cent. cannot be impugned; 2, chance, which cannot explain everything; 3, the spiritualistic theory of the return of the astral body of a dead person is untenable; and 4, what is neither an explanation nor an hypothesis, but a simple enunciation of the fact, which is confirmed in a startling manner by experiment, that the occurrences of the external world, even when they do not affect our sense organs, can still influence our consciousness. The channels through which this occurs is unknown. Experimental data are of two kinds: 1, those observed in persons in the hypnotic state or in the so-called spiritualistic trance, and 2, those which have been observed in normal individuals. Both sets of experiments are equally valid and lead to the conclusion that, in addition to the ordinary sensation, there exists a mysterious hidden sensibility—a cryptesthesia.

Pyocyaneus Bacteriophages.—Sukeyasu Okuda (*Wiener klinische Wochenschrift,* September 6, 1923) states that as a result of his investigations the number of the laboratory strains of pyocyaneus, which contain the bacteriophages against this strain, have been increased. According to previous experiences it appears likely that at least all those strains of pyocyaneus which produce a dark discoloration of their nutrient medium, will have to be examined for the presence of bacteriophages. However, those strains which produce only a light discoloration, need not necessarily be free from bacteriophages. The very peculiar, rudimentary bacteriophages, which are recognized only by a change in the growth of the bacteriophage free strain "Herbert," will have to be given some consideration in the future, as the sensitiveness to heat in this case shows no insignificant fluctuations, which can be explained only partially by differences in concentration. The fact that the formation of bacteriophages, which are apparently very abundant in pyocyaneus, appear in almost typical formation in at least one strain of the Bacillus fluorescens liquefaciens (Basel) offers new evidence of the relationship of these two bacteria.

Pellagra.—B. W. Page (*New Orleans Medical and Surgical Journal,* November, 1923) says that in the treatment of pellagra five grains of ichthyol in pills or peppermint water, or 1/100 of a grain of copper arsenite three or four times a day gives the best results. Other drugs are occasionally indicated as various symptoms arise. An immunity or cure seems to be established in most cases within a few weeks.

Thermal Death Point of the Tubercle Bacillus in Milk, with Special Reference to Its Application in Practical Pasteurization.—F. W. Campbell-Brown (*Lancet,* August 18, 1923), by using twenty-five strains of the tubercle bacillus, showed that no wide differences exist in the thermal death point. The death point of this organism is practically similar for human and bovine types. The previous wide variations in results have been due to too little care in carrying out the experiments, and to the fact that previously the lesions caused in test animals had not always been given sufficient time to develop and be accurately diagnosed. If a temperature of 60° C. be used, it requires twenty minutes' exposure to this degree of heat to prevent milk so treated carrying infection to the guineapig. If a temperature of 70° C. be used, it requires five minutes' exposure to insure the same results. Of these two combinations of time and temperature factors, the former excels the latter, when the food value of the treated milk is also considered. The author is of the opinion that, until bovine tuberculosis can be stamped out at its source—namely, in the ox—proper pasteurization of milk is the only safe method of rendering milk safe as a diet.

Effect of a Normal Meal Upon the Blood Sugar Level in Health and in Certain Conditions of Disease.—I. C. Brill (*Journal of Laboratory and Clinical Medicine,* August, 1923) has made a comparative study of the effects of an average normal breakfast upon the blood sugar content in normal individuals and in various chronic conditions in which the food tolerance is known to be affected. The method is suggested as one to serve as a true food tolerance test, and therefore all the food elements should be represented in the test meal, which included the usual breakfast foods, bread, butter, cereals, eggs, sugar, coffee and cream, amounting to approximately one hundred grams of carbohydrate, twenty-six grams of protein, twenty-seven grams of fats, and 760 calories. In all the cases tried, the curve corresponds very closely to that obtained with the Janney glucose tolerance test. The method suggested is preferable to the glucose tolerance test in that it is simpler, is more agreeable to the patient, and it avoids the danger of overtaxing a weakened function by a large quantity of pure glucose.

Studies of Living Human Blood Cells.—Florence R. Sabin (*Bulletin of the Johns Hopkins Hospital,* September, 1923) describes a technic for studying living blood cells which is simple and readily applicable to the study of clinical cases. The very marked gain in the use of the supravital method for the study of the white cells is the possibility of distinguishing cells which have been markedly stimulated to activity from cells which are degenerating. The second great advantage is the ability to distinguish the old and dying cells so as to complete the life cycle of each of the three types of white cells. From the study of the white blood cells presented, Sabin has shown that there is much evidence to favor the view that the large mononuclear cell is the young form of the monocytic strain and that the large lymphocyte is the young stage of the lymphocytes.

Bowel Torpor in the Elderly

is usually the result of a progressive atony of the bowel, with a gradual decrease of the natural mucus and other secretions. The loss of moisture dries the feces and interferes with their free and easy passage. Under such conditions

INTEROL

serves as a safe and efficient substitute for the physiologic secretions. Following its systematic use, the bowel contents are kept soft, the intestinal canal—especially the large intestine—is adequately lubricated, and the feces are passed along and evacuated in due time without straining, pain, or discomfort.

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Rôle of the Lymphatics in the Absorption of Bile Pigment From the Liver in Early Obstructive Jaundice.—William Bloom (*Bulletin of the Johns Hopkins Hospital,* September, 1923) performed a series of experiments in which both kidneys were removed from a dog in order to prevent any of the bile pigment from being excreted into the urine. The common bile duct was then double ligated and sectioned. The gallbladder was prevented from functioning either by complete extirpation or by ligation of the cystic duct in order to eliminate the variations in time of appearance of bile in the blood, which must obviously occur in experiments in which the varying size and degree of distention of the gallbladder are not controlled. A positive test for bilirubin was obtained in the lymph stream while the blood was still pigment free. The experiments show that the fine intercellular bile capillaries are not ruptured before there is an appreciable bilirubinemia consequent to the occlusion of the common duct. The blood serum of dogs in the first day or two after the blocking of the ductus choledochus gives the indirect Van den Bergh reaction, and in so far renders doubtful the interpretation of the indirect test when actual tissue icterus is not present. After the scleræ are definitely icteric, the direct test is always given. It appears that the removal of bile pigment from the liver in the earliest stages of mechanical jaundice is entirely by the lymph stream and not by the blood stream.

Carbon Tetrachloride in Pharmacology and Therapeutics.—R. N. Chopra and J. Borland McVail (*Indian Medical Gazette,* October, 1923) say that carbon tetrachloride is the most efficient anthelmintic known for hookworm. It is of little value in Ascaris infections and of no value against Tænia. The toxic dose of one to four c. c. to the kilo of body weight is far in excess of the therapeutic total dose of five c. c., i. e., 0.13 c. c. to the kilo, which is given as an anthelmintic to a normal individual weighing sixty-five kilos. Owing to its low solubility and volatility and consequently slow rate of diffusion, only small quantities are absorbed into the circulation. Large quantities can therefore be introduced into the alimentary canal without untoward effects. When given in medicinal doses and with a purge to persons organically sound it is safe, provided the drug is pure, is swallowed, and does not enter the larynx. Carbon tetrachloride itself and its vapor are irritating, and if brought into contact with the mucous membrane of the respiratory tract in any concentration may produce a reflex stoppage of respiration and later a stoppage of the heart and death. Therefore, it must not be forced on struggling children. The great contraindication is a liver with impaired function, such as is caused by alcoholism. The liver appears to retain a large proportion of the small quantity which is absorbed and so protects the vital organs from injury. The presence of heavy round worm infection may also be a contraindication. Large and toxic doses of this drug, whether single or divided, have a damaging effect on the liver parenchyma. With therapeutic doses the damage, if any, is temporary and unimportant. The action of the drug on voluntary and involuntary muscle is depressant. In medicinal doses it is slightly laxative and has no abortifacient action.

Effect of the Intravenous Administration of Mercurochrome on the Bacteriostatic Action of Blood.—J. H. Hill and J. A. C. Colston (*Bulletin of the Johns Hopkins Hospital,* November, 1923) report that following the intravenous administration of mercurochrome, the bacteriostatic action of the blood against Bacillus coli is increased. This increase appears to be greatest from fifteen to forty-five minutes after injection, after which it rapidly disappears.

Action of the Pylorus and First Part of the Duodenum.—Theodor Bársony (*Wiener klinische Wochenschrift,* September 6, 1923) found that in addition to opening and closing, the pyloric valve undergoes a movement which is the result of the antral and bulbar pressure, respectively, and results in a corresponding protrusion. This movement can be observed only in a few cases and then only during a certain stage of the examination. Inasmuch as the contraction of the bulb lasts only a short time and the systole of the antrum continues for a long time, the antral pressure determines the character of the form of the first part of the duodenum.

New Publications Received.

(We shall publish in future full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we shall review those in which we think our readers are likely to be interested).

THE STORY OF MAN'S MIND. By George Humphrey. Boston: Small, Maynard & Co., 1923.

THE HERETIC OF SOANA. By Gerhart Hauptmann. New York: B. W. Huebsch, 1923.

PRURITUS OF THE PERINEUM. By Joseph E. Montague, M.D. New York: Paul B. Hoeber, 1924.

ALCOHOL AND PROHIBITION. By Victor G. Vecki, M.D. Philadelphia: J. B. Lippincott Co., 1923.

NERVOUS AND MENTAL REËDUCATION. By Shepherd Ivory Franz. New York: The Macmillan Co., 1923.

THE EMOTIONS. By Carl George Lange and William James. Volume I. Baltimore: Williams & Wilkins Co., 1923.

A MANUAL OF PSYCHOTHERAPY. By Henry Yellowless. London: A. & C. Black; New York: The Macmillan Co., 1923.

LES SECRETIONS INTERNES LEUR INFLUENCE SUR LE SANG. By Dr. Maurice Perrin and Alfred Hanns. Paris: Bailliere et Fils, 1923.

THE EFFECTS OF RADIUM UPON LIVING TISSUES. By Sidney Forsdike, M.B., B.S., F.R.C.S. New York: Paul B. Hoeber, 1923.

THE TOXEMIA OF ACUTE INTESTINAL OBSTRUCTION. By R. H. Paramore, M. D. Lond., F.R.C.S. Eng. London: H. K. Lewis & Co., 1923.

A TREATISE ON ORTHOPEDIC SURGERY. By Royal Whitman, M.D., M.R.C.S., F.A.C.S. Seventh Edition. Philadelphia and New York: Lea & Febiger, 1923.

RACE. By A. L. Samms. Chicago: Covici McGee, 1923.

BEGINNING AGAIN AT ARARAT. By Mabel E. Elliott, M.D. New York: Fleming H. Revell, 1924.

LABORATORY DIAGNOSIS OF SYPHILIS. A Manual for Students and Physicians. By Hideyo Noguchi, M.D., M.S., Ph.D., D.Sc. New York: Paul B. Hoeber, 1923.

REJUVENATION. How Steinach Makes People Young. By George F. Corners. Introduction by Dr. A. S. Blumgarten. New York: Thomas Seltzer, 1923.

HANDBOOK OF ANESTHETICS. By J. Stuart Ross, M.B., Ch.B., F.R.C.S.E. Second Edition. New York: William Wood & Co.; Edinburgh: E. & S. Livingstone, 1923.

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prompt and uncomplicated recovery almost always calls for the systematic use of an efficient restorative tonic—a preparation that will place the least possible burden on the digestive and assimilative functions of the body, but will at the same time supply the support so urgently needed by weakened and exhausted tissues.

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as a reconstructive tonic, tell beyond all question of its efficiency for the foregoing purposes. Under its use, functional activity is promptly increased, the nutrition is rapidly improved, and the defensive forces of the body are substantially raised.

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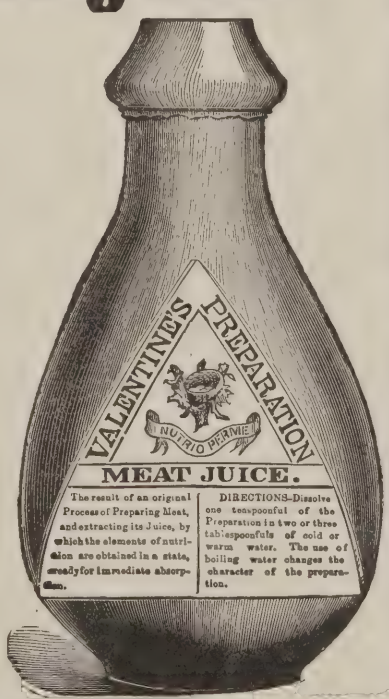
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Miscellany.

Compound Craniocerebral Injuries.—Samuel C. Harvey (*Boston Medical and Surgical Journal,* December 6, 1923) thus describes the operative procedure: The wound in the scalp is lightly packed with gauze saturated with alcohol or tincture of iodine. The entire scalp is then moistened with green soap and shaved without the preliminary use of clippers or scissors. This removes, if carefully done, in the most effectual manner the gross dirt and blood, and a scrub with green soap followed by alcohol and bichloride solution completes the preparation. The original tampon in the wound is now removed and replaced with a second of the same nature. The wound in the scalp is excised *en bloc* with the knife and incisions made, curvilinear or of the "Isle of Mann" type in such a fashion as to enable one to lay back the scalp with a wide exposure of the underlying bone. The portion of this which may have been contaminated is carefully kept away from and multiple perforations are made about it with the Doyen or Hudson burr. These are connected by means of the De Vilbiss or Montenevesi forceps and this area of bone lifted out *en bloc*. It is extremely important that this incision be placed in the bone outside of the possible area of gross contamination and over intact dura. It is necessary to bear in mind at this point that the primary requisite is a procedure which is life saving and that the cosmetic result is relatively unimportant. It is also well to recall that control of intracranial bleeding is simple with adequate exposure, but wellnigh impossible otherwise. Therefore a sufficiently ample area of bone should be removed in order to insure the fulfilment of these requisites. Depressed bone with adequate blood supply may be elevated, but all free fragments of bone in which the blood supply is gone and which lie extradural, should be gently lifted out and removed, inasmuch as this is neither the time nor the place to attempt even autogenous bonegrafts.

The care of the lacerated dura is governed by the fact that it early becomes adherent to the subjacent meninges and such adhesions should be disturbed as little as is possible. The edges rarely need excision except where there are free tags hanging in the wound. When the delay has been short and the approach free from contamination, it may be advisable to enlarge a dural perforation in order to evacuate more thoroughly a subjacent blood clot or the pulped brain tissue; but the occasion is rare when this procedure is expedient.

The treatment of the damaged cortex is directed toward the removal of dirt and devitalized tissue, and foreign bodies such as indriven bone or missiles. The second should not be searched for until the first has been accomplished, for the exploration should be carried out through as clean a wound as possible. The pulped and contaminated brain may often be extruded by having the conscious patient gently strain or cough. It is then washed away with a jet of Ringer's solution, which should be kept playing in the wound throughout this stage of the procedure. Many times by this simple method most of the débris can be removed and the gentle exploration of the cortex with a fine soft rubber catheter through which the salt solution is flowing will complete the cleansing. At the same time this will often enable one to locate indriven fragments of bone or a foreign body. These should be very gently lifted out with fine forceps and this method of examination carried on until nothing more can be found. Only as a last resort should the bare finger be introduced, and then with exceeding gentleness. The operator must be certain that he does not increase the contamination and laceration of the cortex by his own manipulations. His every move should be purposeful. The closure is effected by the careful suture of the scalp in two layers, so carefully done that there can be no leakage and so accurately approximated that healing will be *per primam.* A small rubber tissue wick, to be removed in twenty-four to forty-eight hours, is placed at one angle and serves two purposes,—the one to give exit to the oozing of the immediate postoperative period, the other to provide for the early recognition of infection, for on removal a study of a stained smear is made.

The first evidence of infection must be countered by laying the wound widely open, and adopting treatment as for a fungus cerebri. No gauze must come in contact with the brain substance. It is covered by protective tissue which is removed every twenty-four hours and the wound gently washed with a stream of Ringer's solution. No pressure must be allowed on the herniating cortex and the dressing is built up about it with a "doughnut" so that there can be no compression. By these simple measures at least fifty per cent. of the infected wounds will recover.

Home Disinfection and the Control of Scarlet Fever.—K. Simpson (*Lancet,* September 1, 1923) asserts that home disinfection at best is little more than a formal, much less than a complete proceeding, and consequently can neither reasonably prevent subsequent infection occurring in an already apparently disinfected home among susceptibles—susceptibles of school age being meanwhile excluded from school—nor the subsequent spread of the disease once an outbreak has occurred, which is almost entirely dependent on carriers and school attendance, rather than fomites, leaving out of account for the present sporadic cases met with from time to time in the adult. The author is strongly of the opinion that much of the funds at present spent upon disinfection could be more usefully employed in creating a healthier state of the nasopharynx of the school child by directing greater precision to the examination and treatment of all such defects discovered upon routine medical inspection of school children, by preventing overcrowding in schools, and by the prompt closure of all schools or school departments—public, private and Sunday—in any area threatened with an outbreak of scarlet fever. So far as home disinfection is required after the patient's removal, blankets, etc., from the home used in conveying him to the hospital, should as a matter of course be disinfected before their return, while the further disinfection of the home need only be directed to an effort on the part of the occupants to spring cleaning their infected room with the aid of sunlight, soap and water. The usual method of home disinfection may, however, also be carried out.

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Cleanliness, digestibility, and palatability are also of importance, but without nutritive value any food would be useless as a body builder.

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Scarlet Fever as a Reaction of Hypersensitiveness to Streptococcus Protein.—Leverett D. Bristol (*American Journal of the Medical Sciences,* December, 1923) presents an interesting study of scarlet fever and suggests, 1, that scarlet fever is a reaction of specific hypersensitiveness to streptococcus protein, and 2, that it is a compound condition, involving primarily a local streptococcic infection, usually of the throat but frequently of an accidental or operative wound, burns, or associated with the puerperium, and secondarily a streptococcus protein intoxication in those who are hypersensitive. On the basis of such a theory it seems probable that the prevention and treatment of scarlet fever may depend on two factors; 1. The control of the streptococcus *per se* through adequate isolation and concurrent and terminal disinfection of all cases, including not only frank scarlet fever, but also all other virulent streptococcus diseases, as well as the isolation and treatment of all streptococcus carriers, and proper attention to milk and other possible vehicles of streptococcic infection. 2. The desensitization of individuals who by cutaneous tests are shown to be hypersensitive to streptococcus protein, either by specific (vaccines or antisera) or nonspecific (protein or serum) methods of treatment; and adequate attention to local sites of streptococcic infection, such as the throat, to reduce to a minimum the possible absorption of streptococcus protein.

Tangential Percussion.—L. Karczag (*Wiener klinische Wochenschrift,* August 30, 1923) states that the indirect tangential percussion blow and not the sagittal percussion is the best method of percussion for the determination and limitation of substernal areas of diminished resonance. The finger is bent at a right angle to the fingertip and threshold percussion is practised on the second finger, tangential to the area of percussion. The advantages of this method are that the area of oscillation is reduced as well as the oscillations themselves and there is also a diminution of the threshold value. It is particularly useful in determining the limitations of substernal areas of diminished resonance because it eliminates the tone of the sternum itself as much as possible. Percussion is made either upon the second phalanx of the middle finger in the Plesch position of the hand or upon a pleximeter about eight centimeters long and five to eight millimetres thick, made of ivory or ebony. The author distinguishes between manubrial, corporal, and xiphoid dullness.

Isoamyl Ethyl Barbituric Acid—An Anesthetic Without Influence on Blood Sugar Regulation.—Irvine H. Page (*Journal of Laboratory and Clinical Medicine,* December, 1923) found that isoamylethylbarbituric acid, in amounts sufficient to produce surgical anesthesia, has little or no effect upon the blood sugar, and is superior to barbital, isopropylethylbarbituric acid, trichlorotertiary butyl alcohol and urethane for blood sugar investigation. Animals under the influence of this anesthetic show normal responses to splanchnic stimulation, and with it the usual hyperglycemia following hemorrhage occurs. Insulin produced a uniform decrease in blood sugar in animals under this anesthetic, probably due to the fact that the nervous factor in glycogenolysis is minimized.

Ischiorectal and Other Abscesses.—J. P. Lockhart-Mummery (*Clinical Journal,* December 5, 1923) asserts that an ischiorectal abscess may be opened in the following manner with less danger than usual of formation of a fistula. The abscess is opened with a knife by a crucial incision in the usual way and the pus allowed to flow out. The skin covering, or forming, the outer wall of the abscess is then completely cut away so as to leave a large opening of an inch or more in diameter, the interior of the abscess being left entirely alone and untouched. A large flat dressing of moist antiseptic gauze is applied all over the parts and covered with a protective, so as to keep it moist and prevent it sticking to the edges of the wound and interfering with drainage. The pad should be large enough to absorb all the discharge for at least twelve hours. The patient should be nursed lying on his back as much as possible, so that the pressure is towards the opening in the abscess. When the dressing is changed it will be found that the abscess cavity has completely vanished, and that there is only a flat shallow ulcer, which may take ten days or a fortnight to heal, but does not result in a fistula once in twenty times.

New Publications Received.

(We shall publish in future full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we shall review those in which we think our readers are likely to be interested).

LECTURES ON ENDOCRINOLOGY. By Walter Timme, M.D. New York: Paul B. Hoeber, 1924.

AN INTRODUCTION TO SURGICAL UROLOGY. By William Knox Irwin, M.D., Aberd., F.R.C.S., Edin. New York: William Wood & Co., 1924.

HERNIA. By Leigh F. Watson, M.D. 232 original illustrations by W. C. Shepard. St. Louis: C. V. Mosby Co., 1924. Pp. 660.

PRACTICAL CHEMICAL ANALYSIS OF BLOOD. By Victor Caryl Myers, M.A., Ph.D. Second Revised Edition. Illustrated. St. Louis: C. V. Mosby Co., 1924. Pp. 232.

INTRANASAL SURGERY. By Fred J. Pratt, M.D., F.A.C.S. and John A. Pratt, M.D., F.A.C.S. Illustrated with 195 halftone engravings. Philadelphia: F. A. Davis Co., 1924. Pp. 334.

NOUVEAU TRAITE DE MEDECINE. Fasicule XI. Pathologie de l'appareil respiratoire. By G. H. Roger, Fernand Widal, P. J. Teissier and others. Paris: Masson et Cie, 1923. Pp. 630.

CLINICAL MEMORANDA FOR GENERAL PRACTITIONERS. By Alex Theodore Brand, M.D., C.M., V.D. and John Rober Keith, M.A., M.D., C.M. Second Edition. New York: William Wood & Co., 1924. Pp. 376.

GENITOURINARY DISEASES AND SYPHILIS. By Henry H. Morton, M.D., F.A.C.S. Fifth Edition, revised and enlarged; with 328 illustrations and 38 full page colored plates. New York: Physicians and Surgeons Book Co., 1924. Pp. 712.

MANAGEMENT OF THE SICK INFANT. By Langley Porter, B.S., M.D., M.R.C.S. (Eng.), L.R.C.P. (Lond.), and William E. Carter, M.D. Second Revised Edition. Illustrated. St. Louis: C. V. Mosby Co., 1924. Pp. 659.

INTRAVENOUS THERAPY. Its Application in the Modern Practice of Medicine. By Walter Forest Dutton, M.D. Illustrated with 59 halftones and line engravings including color plates. Philadelphia: F. A. Davis, 1924. Pp. 54[illegible].

GERIATRICS. A Treatise on the Prevention and Treatment of Diseases of the Care of the Aged. By Malford W. Thewlis, M.D. With introductions by A. Jacobi, M.D., LL.D., and I. L. Nascher, M.D. Second edition, revised and enlarged. St. Louis: C. V. Mosby Co., 1924. Pp. 39[illegible].

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S 112 **Richmond, Virginia, U. S. A.**

Miscellany.

Effect of Histamine on the Human Gastric Secretion.—Alister R. Matheson and Sydney E. Ammon (*Lancet,* March 10, 1923) found that histamine given subcutaneously in small doses excites a flow of gastric juice in man. The peptic activity increases after the injection and reaches its maximum usually in about five to fifteen minutes. Both total and free hydrochloric acid increase and attain their maxima shortly after the pepsin maximum is registered. The secretory rate follows a similar course, and usually attains its maximum last of all. The dose employed by the authors to evoke gastric secretion does not produce any harmful gastric or general disturbance. This being the case, it seems possible that histamine may be employed as a means of investigating the state of gastric secretory function and perhaps as a therapeutic agent.

Study of Yeasts Found in Sputum of Patients with Asthma and Chronic Bronchitis.—Edward Steinfield (*Journal of Laboratory and Clinical Medicine,* August, 1923) found yeasts belonging to the genera Monilia endomyces and cryptococcus in large numbers in the sputum of patients with asthma and chronic bronchitis. On the basis of biochemical reactions, some of these were comparable to the yeasts, particularly Monilia, found in cases of bronchomycosis described by Castellani. Production of eosinophilia in the peritoneal exudate and blood of guineapigs after intraperitoneal injections was noted as a constant feature. The patients from whom these cultures were isolated did well when treated with iodides in the dosage of about 2 gm. a day or more. The injections of vaccines made from suspension of spores was given a tentative trial with fair results, such as are often noted with the use of bacterial vaccines.

Uric Acid in the Blood.—The clinical importance of ascertaining the amount of uric acid in the blood has recently been demonstrated by Professor Jeanbrau, of the Faculty of Medicine of Montpellier, and his coworkers, Dr. Cristol and Dr. Nikolitch. There are four factors that provoke pathological uricemia, according to these observers, who admit gram 0.03 to gram 0.05 to the thousand c.c. as the extremes of normal uricemia.

The first factor is renal. A nephritic kidney, impermeable to urea, is likewise impermeable to uric acid. But the increase of the percentage of the uric acid in the blood precedes that of urea and the alarm uricemia precedes the alarm azotemia of Widal. In some cases of unquestioned azotemic nephritis these observers have noted hyperuricemia, but the patients had high blood pressure, so that the circulatory factor compensated the renal factor.

The second factor is circulatory. In patients with a perfectly compensated cardiopathy—clinically, high blood pressure—the hyperuricemia is insignificant, while, when the equilibrium of the circulation is broken, hyperuricemia becomes manifest, and just as uric acid is the first nitrogenous compound retained in the case of renal impermeability, so it is the first to be retained in the blood when diuresis decreases on account of a disturbed equilibrium of the blood pressure.

The third factor is mechanical. The research for uricemia in prostatic and stricture cases—twenty-five patients in all—revealed the fact that this class of patients usually presented hyperuricemia, likewise hyperazotemia, hence a high percentage of urea in the blood is a temporary contraindication for prostatectomy. However, even in cases where the blood urea is not above gram 0.50 to the thousand c.c., hyperuricemia is manifest. Here again, uric acid is the first nitrogen compound retained. This increase of uricemia is the result of vesical retention and distention which offer a mechanical obstacle to renal secretion. Cystostomy causes the renal congestion to subside and an almost normal excretion of urine ensues. These observers found that uricemia remains normal when the lesion is unilateral in surgical affections of the upper urinary tract, but hyperuricemia is generally present in bilateral renal tuberculosis and pyelonephritis. A mild hyperuricemia even is the first evidence of functional bankruptcy of the opposite kidney.

The fourth and last factor is that of the tissues. Hyperuricemia is manifest in cachectic subjects, in which destruction of tissue is active, such as cancer, tuberculosis and other serious infectious processes. In this case, the uricemia is endogenous, while the three factors are exogenous. These findings have appeared to me of sufficient clinical importance to give somewhat in detail.

A New Organic Compound With Powerful Germicidal Properties.—George W. Raiziss and M. Severac (*Journal of Laboratory and Clinical Medicine,* November, 1923) describe a new mercury compound which they call metaphen which is a powerful germicidal substance, particularly against staphylococci. It has the following properties: a comparatively high bichloride of mercury index; practically nonirritating to the skin or mucous membranes; low toxicity when administered intramuscularly; powerful spirocheticide; does not tarnish surgical instruments, and does not precipitate proteins in as high concentration as 1:200, while the maximum concentration for all practical purposes should not exceed 1:1000. The authors recommend its use because of its high destructive effect upon bacilli, and its many favorable biologic properties.

Aftereffects of Certain Industrial Injuries and Their Treatment by X Rays.—Reginald A. Morrell (*British Medical Journal,* September 15, 1923) states that the clinical improvement after the use of x rays is manifested, 1, by the relief of pain when a nerve was being strangulated by cicatricial tissue in cases of superficial scars and in certain cases of neuromata in amputation stumps; 2, by greater and more rapidly secured freedom of movement in such a joint as the shoulder after prolonged suppuration and extensive operations in its neighborhood; 3, by a greater range of action in cases of transplanted tendons for injuries of the musculospiral nerve, and 4, by improvement in peripheral circulation where the brachial vessels were being constricted by scar tissue following gunshot wounds. Radiotherapy is indicated in injuries of the tendons of the wrist or fingers after primary or secondary suture, extensive lacerated wounds or burns of muscle, tenosynovitis, Dupuytren's contracture, and keloids.

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HACKENSACK, . - - - - NEW JERSEY, U. S. A.

The Problem of Overcrowding in London Hospitals.—Mr. E. W. Morris, House Governor of the London Hospital, Whitechapel, speaking in London recently on The Future of the Voluntary and Municipal Hospitals, advocated the giving of power to the voluntary hospitals to make use of the facilities afforded by Poor Law Infirmaries. There were 117 hospitals in London and 835 in the rest of Great Britain, with a total between them of 52,194 beds. The taint of the Poor Law made the infirmaries unpopular with the poor, but in these Poor Law infirmaries there were 92,000 beds, 30,000 of which were empty during the summer months and 20,000 in the winter. It was reasonable to try to devise a means whereby these unused beds could be utilized by persuading the sick poor to make use of the infirmary as well as the hospital. He suggested that the hospitals should have power to send patients to the infirmaries on some special terms. The hospitals were now taking some hundreds of cases which would go to the infirmaries but for the existence of the hospitals. The hospitals could ease the burden on their beds by declining to admit accident cases until they had cleared their waiting lists, thus compelling the emergency cases to go to the infirmary. It could be arranged that cases sent from the hospitals should be grouped together in the infirmary and not be placed under the stigma of pauperism. Such patients would wear their own clothes and be registered in special books. The hospital could not pay in cash but it could in other ways. The consultants would visit the infirmary and qualified hospital students would be called upon to act as house surgeons and physicians under the infirmary medical officers. There could be an interchange of patients.

Preschool Education.—At a congress on education, held recently in London, Miss Margaret McMillan, president of the Nursery Schools Association, discussed Preschool Education. She said that the Nursery Schools Association stood for the help of the very young school element that had never been catered to before. Its mission was to be flexible, and to adapt itself to rapidly changing conditions and environment. The nursery school was an open air school and this was an important feature from the point of view of the child. Eighty-five per cent. of the children who entered these schools suffered from rickets and were tortured by fear, but the schools had saved them from both. The sunlight and fresh air had saved them from rickets, from tuberculosis and from deformity. The association's proposal was that new nursery schools should be started where they were most needed, in the crowded alleys of our great cities. In the Deptford Nursery School, of which Miss McMillan was the head, they had two hundred and fifty little children under the age of five years. It had been feared at first by medical officers and others that it would be dangerous to gather so many children together in one place, but experience had proved these fears unfounded, and, whereas, it had been the practice before the days of the nursery school to close all schools during an epidemic, the method of those in charge of nursery schools was to keep them open because there they could nourish the children and maintain their bodily strength. It was their plan to erect cheap open shelters for the children and not to confine the temple of the human soul within stone walls. Some of the schools had as many as ten open air structures and experience had demonstrated that the most suitable number of children for each shelter was thirty-five. In its work the nursery school was doing a great service, not only to the child but to the neighborhood. It had the function of a people's garden or recreation ground. It was an ideal place for the parents to go, and especially for young mothers. There they could look not only on blooming flowers and green patches, but they could look upon cultivated blossoms of humanity which were their own children. It was a city of refuge from the streets and narrow ways where the children's lives were threatened. What kind of life, she asked, had those children in their slum houses? They saw their parents only infrequently and heard only rough voices. There were about a million little children in England under five years to be dealt with and not fewer than five hundred thousand were in desperate straits. From two hundred to three hundred nursery schools were needed within the next five years.

New Publications Received.

(We shall publish in future full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we shall review those in which we think our readers are likely to be interested).

HANDWORTERBUCH DER SEXUELLWISSENSCHAFT. By Max Marcuse. Bonn: A. Marcus & E. Webers Verlag, 1924.

SUNLIGHT AND HEALTH. By C. W. Saleeby, M.D., F.R.S.E. With an introduction by Sir William Bayliss, K.B.E., D.Sc. New York: G. P. Putnam's Sons, 1924. Pp. 198.

OPERATIVE SURGERY. By Warren Stone Bickham, M.D. In Three Volumes. Philadelphia: W. P. Saunders Company, 1924.

HIGH BLOOD PRESSURE. By J. F. Halls Dally, M. A., M.D., B. C. Cantab. M. R. C. P. Lond. New York: Wood & Company, 1924.

AROMATICS AND THE SOUL. A Study of Smells. By Dan McKenzie, M.D. (Glas.) New York: Paul B. Hoeber, Inc., 1924. Pp. 164.

DIE RÖNTGENBEHANDLUNG DES UTERUSKARZINOMS. By Dr. Hermann Wintz. With 50 illustrations. Leipzig: Verlag von Georg Thieme, 1924.

NOUVEAU TRAITE DE MEDECINE. Volume VIII. Pathologie des Glandes Endocrines Troubles du Developpement. By G. H. Roger, F. Widal and others. Paris: Masson & Co. 1923.

A SYNOPTIC CHART OF SKIN DISEASES. For the Use of General Practitioners and Students. By B. Burnett Ham, M.D., D.P.H. Illustrated with two colored plates. New York: Paul B. Hoeber, Inc., 1924. Pp. 8.

MODERN UROLOGY. In Original Contributions by American Authors. Edited by Hugh Cabot, M.D., C.M.G., F.A.C.S. Volume I and II. Second Edition; thoroughly revised; illustrated. Philadelphia and New York: Lea and Febiger. 1924.

FIGHTING FOES TOO SMALL TO SEE. By Joseph McFarland, M.D., Sc.D., Professor of Pathology in the Medical Department of the University of Pennsylvania. Illustrated with Sixty-four Engravings. Philadelphia: F. A. Davis Company, 1924. Pp. 309.

HANDBUCH DER BIOCHEMIE DES MENSCHEN UND DER TIERE. Unter Mitwirkung Von Geh. Rat E. Abderhalden, Prof. Hans Aron, Prof. G. v. Gergmann, Prof. A. Bickel, Dr. W. Biehler, et al. Herausgegeben Von Prof. Dr. Carl Oppenheimer in Berlin-Zweite Auflage, Lieferung 11, 12, 13. Jena: Verlag Von Gustav Fischer, 1924.

Following the Acute Infections

prompt and uncomplicated recovery almost always calls for the systematic use of an efficient restorative tonic—a preparation that will place the least possible burden on the digestive and assimilative functions of the body, but will at the same time supply the support so urgently needed by weakened and exhausted tissues.

The constantly increasing number of medical men that have come to rely on

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as a reconstructive tonic, tell beyond all question of its efficiency for the foregoing purposes. Under its use, functional activity is promptly increased, the nutrition is rapidly improved, and the defensive forces of the body are substantially raised.

Gray's Glycerine Tonic Comp. is thus recognized by the busy practitioner as a body-builder to which he can "pin his faith" as a dependable means of promoting convalescence and hastening recovery.

A trial of this reliable tonic will show its exceptional value following the acute infections prevalent at this season of the year.

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William H. Peters, M. D., *Admitting Physician, Camp for Consumptives, State of Rhode Island, Providence, R. I.;* "VALENTINE'S MEAT-JUICE was the only nourishment retained by my five-year old daughter during an attack of Pneumonia. I consider that it saved her life and believe it to be the best product of its kind."

Cavalier Dr. Enrico Ballerini, *Late Surgeon to the Hospital of Rome, Italy:* "I have used VALENTINE'S MEAT-JUICE in the treatment of patients, and also personally, after having been very ill with Influenza, and I must say it is an excellent tonic in conditions of great organic weakness. It is also very agreeable. I have prescribed it with the greatest satisfaction for convalescents and invalids restricted to a liquid diet."

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Miscellany.

Bodily Build a Clue to Disease.—Diagnosis of disease from the physical build of the patient may become a reality if the conclusions reached by Dr. George Draper, Dr. Halbert L. Dunn, and David Seegal, of the Presbyterian Hospital, New York, become generally confirmed. The "consumptive build" or the "bilious countenance" may be accepted as scientific realities.

Measurements made of fifty patients with gallbladder disease, and of thirty-nine patients with ulcers of the stomach or intestines have shown that those who suffer from one complaint have on the average a different physical build from those who suffer from the other. The diagnoses in all these cases were confirmed at operation. About eighty-five separate measurements were made on each individual.

Gallbladder patients were generally heavier for their height than those afflicted with ulcer, had greater chest depth, a wider and squarer upper jaw, and showed other marked differences. The method offers confirmatory evidence in cases of doubtful diagnosis.

The physicians who made these investigations do not believe that a given physiological form "in itself predisposes to or actually causes disease," but merely that physical features express inherited influences and predispositions. Aside from their value in finding out what is the matter with sick people, these measurements, made upon well persons, will be a guide to them as to what diseases they have particular reason to guard against.

These first reported scientific measurements were made at the new Constitution Clinic of the Presbyterian Hospital, which has been established for the purpose of finding out the relations between the bodily structure, the body functions, the mental processes, and immunity and susceptibility to disease.

Botulism Easily Prevented.—Fatalities from botulinus poisoning resulting from eating home canned foods, such as recently occurred in a Pacific Coast State, may be prevented beyond reasonable doubt by two simple precautions, officials of the Public Health Service say. These precautions are, first, the rejection of all canned goods which on opening look or smell spoiled or tainted in the least degree; and second, the reheating to the boiling point of all canned goods before serving. It is not safe to test doubtful cans by tasting their contents before heating, as fatal cases of poisoning have occurred from this practice. The heating should be thorough, all parts of the contents of the can being brought to the boiling point. Unless one wants to risk the lives of the fowls, apparently spoiled goods should not be fed to the chickens, since whole flocks have been killed in this way.

While, according to the Public Health Service, botulinus poisoning is a rare disease in proportion to the millions of cans of food packed, it is highly dangerous to eat any such food which appears to be in the slightest degree spoiled. Botulism is very rare east of the Pacific Coast States, in which outbreaks are much more frequent, the bacteria being apparently more common in the soil of that region. Acid vegetables and fruits which are thoroughly cooked before canning are safest. The greater number of fatalities have occurred from eating canned string beans, spinach, or corn; and more deaths have resulted from eating home canned products than those which are commercially packed.

Great Portuguese Library Opened in Washington.—The third largest library of Portuguese literature, and especially of that produced in Brazil concerning the history and development of that country, has just been opened in Washington. It contians forty thousand volumes and is the gift of Dr. Manoel De Olivera Lima to the Catholic University of America. Dr. Lima is a Brazilian and was for many years in the diplomatic service of his country. The library was collected during a period of forty years and contains many rare works, which are not to be had in any library of Portugal or Brazil. The collection, which is surpassed only by one in Lisbon and one in Rio Janeiro, is valued at $500,000. It contains also many rare prints and engravings and will eventually be housed in a building at the university to be erected solely for that purpose.

Lowly Worm's Track Preserved One Hundred Million Years.—Among the humblest of all living creatures is the sandworm. Yet there was once a family of sandworms in Sweden which made so fine a record of its wanderings that it has been preserved a hundred million years. This has been brought to light through the discoveries, just made, of various fossils of the Cambrian period, the earliest period of the Paleozoic age, at Narke, in the central part of Sweden. The worm tracks, known as arenicolies, consist of tubelike forms in the rocks, which are believed to have been left by the passage of worms through sand which afterwards became petrified. Dr. Westergardh, one of the state geologists, who has examined these finds, reports that, while similar fossils have previously been discovered in Sweden, these are particularly valuable because of the unusually fine preservation. He fixes the age as about one hundred million years.

New X Ray Apparatus Shows Anatomical Structure of Metals.—The development of an instrument that makes possible the investigation of the internal atomic structure of any metal or other substance has been made by Dr. S. J. M. Allen, of the University of Cincinnati, who is a research associate of the Carnegie Institution's Department of Terrestrial Magnetism, and is now working in the Cavendish Laboratory of Cambridge University under Sir E. Rutherford. Previous methods of x ray analysis have required that the substances to be examined should be in the shape of crystals or at least that the material be finely powdered. Dr. Allen's new apparatus allows the inspection of a piece of material in its natural commercial state without destroying its properties in any way. X rays are directed on the metal studied and the reflected rays are thrown on a photographic plate through the cracks in a series of very closely spaced lead plates which prevent all rays except those desired from reaching the negative. Although application to commercial testing has yet to be worked out, it is declared that the new process is likely to prove of great value in testing all sorts of materials.

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Cleanliness, digestibility, and palatability are also of importance, but without nutritive value any food would be useless as a body builder.

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HACKENSACK, . - - - NEW JERSEY, U. S. A.

Long Distance Steam Gives Power and Heat.—A row of business buildings in Pittsfield, Mass., are now heated by the exhaust steam from a 750 kilowatt turbogenerator used by a local power company, says the *Engineering News-Record* in its current issue. The steam is conducted to the generator through what is believed to be the longest high pressure steam line in the world. It is 3,600 feet long, carries the steam at a pressure of 195 pounds, and is built partly under and partly above the ground. The pipe is eight inches in diameter and covered by three inches of insulation, consisting of two quarter inch layers of fireproof felt over which is a layer of eighty-five per cent. magnesia; over this is a protective jacket of heavy duck, while to waterproof the whole a three ply wrapping of roofing paper is used.

Frozen Nitrogen Cloud Makes the Sky Blue.—The blue color of the atmosphere is caused by a stratum of frozen, crystalline nitrogen in extremely high altitudes, according to theories put forward by Dr. L. Vegard. The aurora borealis and zodiacal light are attributed by him to the same cause. Dr. Vegard asserts that there is some point in the upper atmosphere where the temperature must fall as low as 350 degrees below zero Fahrenheit. If so, nitrogen, the main constituent of air, must freeze, even as snow is formed in an ordinary wintry atmosphere. The resulting nitrogen frost is likely to remain in a dispersed state. Dr. Vegard also assumes that it is electrically charged. Inasmuch as the atmosphere is shallower near the poles than at the equator, the air frost would approach the earth more closely in polar latitudes. More light disturbances would therefore occur in such regions. The presence of nitrogen at such great altitudes as must be necessary to get temperatures as low as 350 degrees below zero is accounted for by Dr. Vegard by the repellent effect of the electrical charges which these particles are assumed by him to carry. Temperatures at the highest levels at which observations have been made, or about twelve miles, have seldom been found lower than 85 degrees below zero, and the temperature shows no tendency to decline beyond that point. Dr. Vegard suggests that this outer shell of nitrogen frost cloud may act also as an envelope for the atmosphere and prevent it from diffusing into space.

Plant Veins Serve Them as Nerves.—The vascular bundles of plants have been found to serve a purpose similar to the nerves of animals, Prof. Henry H. Dixon, F.R.S., told an audience at a lecture in Dublin recently. These vascular bundles not only carry raw food material from the roots to the leaves but also transport the chemical messengers which take the place of nerve impulses, the speaker said. The similarity of distribution of the vascular bundles in plants and that of the nerves in animals was noticed long ago, but as the details of the two systems were worked out differences between the two became accentuated rather than the similarities; now the latter are receiving more attention. In both cases a stimulus given to one part of the body often causes a reaction in a different part. If the taproot of a plant be artificially deflected from the vertical, a stimulus is set up in a cell just behind the root tip, which results in a bending of the root at that point till it is again growing vertically downwards. Again, when the tip of a grass seedling is illuminated on one side a stimulus is transmitted thence downwards to the shaded part and causes curvature there.

It has been shown that the stimulus is propagated through some plants at a rate of ten to twenty millimetres a second. This speed, though slow compared with the velocity of transmission of stimuli along animal nerves, is fast among plants. Scientists are beginning to believe that the stimulus is conveyed by chemical messengers or hormones liberated by the stimulated part into the transpiration stream. In Professor Dixon's words: "Whatever the intimate mechanism of the system is, the subject of the transmission of stimuli through plant tissues offers a striking example of the swing of the scientific pendulum of scientific opinion. The view based upon superficial resemblances, that the vascular bundles are the nerves of plants, was long abandoned, but now we see there is clear evidence that they actually transmit stimuli from the sensory to the motor regions, and so perform the functions of nerves"; but there are very great differences in detail between the modes of action in the two cases.

New Publications Received.

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FIGHTING FOES TOO SMALL TO SEE. By Joseph McFarland, M.D., Sc.D. Philadelphia: F. A. Davis Company, 1924. Pp. 309.

EMERGENCY OPERATIONS FOR GENERAL PRACTITIONERS ON LAND AND SEA. By H. C. Orrin, O.B.E., F.R.C.S. Ed. New York: William Wood & Co., 1924. Pp. 135.

THE INSULIN TREATMENT OF DIABETES MELLITUS. By P. J. Cammidge, M.D. (Lond.), D.P.H. (Camb.). New York: William Wood & Co., 1924. Pp. 172.

HOW OUR BODIES ARE MADE. By R. M. Wilson, M.B., Ch.B. Oxford Medical Publications. London: Henry Frowde and Hodder & Stoughton, 1924. Pp. 246.

AN OUTLAW'S DIARY. In Two Volumes: Volume I, Revolution; Vol. II, The Commune. By Cécile Tornay. New York: Robert M. McBride & Company, 1924.

PHYSICAL EXERCISES FOR DAILY USE. By C. Ward Crampton, M.D., Illustrated. New York and London: G. P. Putnam's Sons, Knickerbocker Press, 1924. Pp. 293.

SUNLIGHT AND HEALTH. By C. W. Saleeby, M.D., F.R.S.E. With an introduction by Sir William Bayliss, K.B.E., D.Sc. New York: G. P. Putnam's Sons, 1924. Pp. 198.

A PHYSICIAN'S MANUAL OF VACCINE THERAPY. By G. H. Sherman, M.D., Detroit: Press of The Bacteriological Laboratories of G. H. Sherman, M.D., 1924. Pp. 160.

METHODS IN MEDICINE. The Manual of the Medical Service of George Dock, M.D., ScD. By George R. Herrmann, M.D., Ph.D. St. Louis: The C. V. Mosby Company, 1924.

THE ANTIDIABETIC FUNCTIONS OF THE PANCREAS AND THE SUCCESSFUL ISOLATION OF THE ANTIDIABETIC HORMONE.—INSULIN. By Professor J. J. R. MacLeod and Professor F. G. Banting. The Beaumont Foundation Lectures, Series No. 2. St. Louis: C. V. Mosby Company, 1924. Pp. 39.

THE MEDICAL DEPARTMENT OF THE UNITED STATES ARMY IN THE WORLD WAR. Volume V: Military Hospitals in the United States. Prepared under the Direction of Major General M. W. Ireland, M. D., Surgeon General of the Army. By Lieutenant Colonel Frank W. Weed, M.C., U. S. Army. Washington: Government Printing Office, 1923. Pp. 857.

Following the Acute Infections

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In **Gastric** and **Intestinal Troubles,** in **Febrile Conditions,** in **Wasting** and **Debilitating Diseases** and before and after **Surgical Operations** when the **Stomach** is **Rejecting Food** and it is **Essential** to **Conserve** the **Vital Forces, Valentine's Meat-Juice** demonstrates its **Ease** of **Assimilation** and **Power** to **Restore** and **Strengthen.**

In Hospital Practice.

P. McDonnell, *M. B. Hon. Surgeon, Lowestoft and North Suffolk Hospital, Lowestoft, England:* "We have found VALENTINE'S MEAT-JUICE invaluable in cases of shock and collapse of men who have been blown up in their ships by mines and torpedoes. Some of the patients have been severely injured, often for hours before admission here, and VALENTINE'S MEAT-JUICE has been the only food they could retain."

W. S. Tremaine, M. D., *Professor of Surgery, Niagara University; Consulting Surgeon Maternity, Emergency and St. Francis Hospitals, Buffalo, N. Y.:* "I have much pleasure in stating that I have used VALENTINE'S MEAT-JUICE for more than ten years and can testify to its excellence. I know that I have saved lives with it when every other form of nourishment was rejected. It is a most valuable preparation, and I constantly use it."

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Miscellany.

Pellagra Prevented by Fresh Meat Diet.—Surgeons Joseph Goldberger and W. F. Tanner, of the United States Public Health Service, in a report on the treatment and prevention of this disease, state that fresh meat and fresh milk contain the essential preventive factors. A diet containing a quarter of a pound of lean beef or a quart of milk a day will suffice as a preventive in all but very exceptional instances. The milk may be taken either as sweet milk or as buttermilk, the preventive factors occurring in the protein of the milk. The butter fat, which is separated when the cream is removed, is without preventive power.

In eight cases of pellagra the patients were treated by feeding them beef, and improvement followed in every instance. The doctors emphasize that this is almost certainly not the only way in which immunity may be achieved, but they merely state that such a diet as has been described will prevent the disease. It even seems probable in their opinion that a much less amount of meat or milk will suffice, as an instance of which they cite the relative immunity of oriental races to pellagra in spite of a diet in which meat or milk forms a small part. Other foods are apparently equally efficient preventives, they state, but what these foods are is not as yet known.

But enough is now known, according to this report, to prevent the occurrence of the disease, to cure cases of at least moderate severity, and to establish that the primary cause of this serious and frequently fatal ailment is a faulty mixture of protein in the diet, or a deficiency in some dietary complex, possibly a vitamine, rather than a germ infection or excessive consumption of starchy foods.

Medical Education in Cairo.—The Royal School of Medicine at Cairo, formerly known as the Egyptian Government Medical School, and still better as the Kasr-el-Ainy Hospital and School, is an institution with a long and chequeured history, says an editorial writer in the *Lancet,* March 29, 1924. Founded in Napoleonic times, afterwards fostered by Mahomed Ali, it has languished from time to time, to revive under some foreign tutelage, which has been at various times, French, Italian, and British. Under the last two British directors, Dr. H. P. Keatinge and Mr. Owen Richards, it has reached a high state of efficiency and developed into an important centre for medical education, being the only one in Egypt. The school is under the direct control of the Minister of Education, but the Under Secretary of State for Public Health is also concerned in the administration of the hospital. The entry is limited to a hundred new students each year, selected from the successful candidates at the examinations for the secondary education certificates in science. The curriculum for the diploma of the Royal School of Medicine at Cairo has hitherto been approved by the Conjoint Board of the English Royal Colleges, who send a visitor to the examinations, which are conducted in English. The diplomats of the Royal School of Medicine are allowed to proceed direct to the final examinations of the Conjoint Board when they come to this country, a privilege which has been extensively used by Egyptian practitioners.

The school at Cairo is well equipped and is staffed by a number of professors, who until recently have been mostly of British nationality with Egyptian assistant professors and demonstrators, although the chair of parasitology was formerly occupied by a German, Prof. Arthur Looss, who made very distinguished contributions to the literature of his subject. The clinical material at the hospital is almost unrivalled. There is an average daily attendance of nearly a thousand patients in the various outpatient clinics. Unfortunately, the hospital buildings are old and incapable of further extension or adaptation, with the result that the arrangements in the hospital are cramped, unsatisfactory and unworthy of the school. We understand that plans were in preparation for a new and up to date hospital near the school, but for some reason this scheme has not yet been put into execution.

The present flourishing state of the school is without doubt due to the good work done by the English professors in the school and hospital with the loyal cooperation of their Egyptian colleagues, and special attention is given in the curriculum to subjects of importance in Egyptian practice, notably ophthalmology, parasitology, forensic medicine, and public health. A large proportion of the successful students enter the Government service, so their familiarity with these subjects is of national importance.

Warning Against Fake Psychologists.—Charging that many lecturers and socalled schools are exploiting unscientific beliefs and practices under the guise of psychology, the National Committee for Mental Hygiene has issued a warning against fake psychologists. "Much that is today called psychology is misnamed," the committee says. "Perhaps no word is more abused. It should not be confused with phrenology, spiritism, faith healing, selfimprovement by magic, psychic phenomena, and the like. Psychology is the science of human behavior. As often happens in the development of a new science, many people have seized upon the opportunity to gain support for their unscientific beliefs and practices. The exploiters of the present interest in psychology may be roughly grouped as follows:

"First, there are certain lecturers who are going about the country organizing classes or advertising selfimprovement courses in the name of psychology.

"The second group consists of those correspondence courses that make extravagant claims for developing the mind and the will. These courses are alleged to be doing a land office business.

"Then there are special book publishers, who write and issue sets of books and magazines purporting to discuss psychological subjects, which have a wide circulation.

"It is conceivable that some, at least, of the students of such courses are inadequate personalities, who, from physical or other causes, are unable to compete successfully with their fellowmen, and see in these courses, lectures, and literature a cureall for their troubles. In some instances no harm may result. But when a false sense of security postpones needed medical or psychiatric treatment, disaster is sure to follow. For these persons to resort to courses, lectures, and literature would seem about as effective as for them to carry a horsechestnut, a rabbit's foot, or other charm in their pockets."

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Activities of the Rockefeller Foundation.—A review of the activities of The Rockefeller Foundation in 1923, written by its president, Dr. George E. Vincent, has been issued. It summarizes the year's work as follows:

During the year 1923 the International Health Board, the China Medical Board, and the Division of Medical Education of the Rockefeller Foundation

Supplied fellowship funds for 636 individuals in twenty-nine different countries.

Supported through the League of Nations interchange institutes for fifty-four public health officers from twenty-seven nations.

Arranged international visits of one commission and of twenty-four visiting professors.

Furnished emergency relief in the form of medical literature or laboratory equipment and supplies to institutions in fifteen European countries.

Sent scientific material to Japan after the earthquake and invited a group of Japanese medical scientists to use the laboratories of the Peking Union Medical College as guests of the institution.

Continued to contribute to schools or institutes of hygiene at Harvard, London, Prague, Warsaw, and Sao Paulo, Brazil.

Cooperated in nurse training at Yale University and in France, Belgium, Brazil, China, and the Philippines.

Accepted an invitation from Brazil to participate in a comprehensive attack upon yellow fever.

Had a share in demonstrations of malaria control in twelve American States and conducted malaria surveys or studies in the United States, Brazil, Australia, Nicaragua, Porto Rico, Salvador, the Philippine Islands, and Palestine.

Either continued or began antihookworm work in conjunction with twenty governments in various parts of the world.

Contributed to 183 county health organizations in the United States, New Brunswick (Canada), and Brazil.

Continued a study of the medical schools of the world by visits to Belgium, Austria, Czechoslovakia, Germany, Hungary, Poland, Turkey, Hongkong, the Straits Settlements, Siam, Canada, England, Scotland, Wales, the Netherlands, Mexico, and Colombia.

Offered to contribute 280,750 pounds sterling to the development of medical education in certain universities in the British Isles.

Gave $500,000 to the University of Alberta, and pledged $250,000 to the University of Pennsylvania toward buildings for anatomy and physiological chemistry.

Continued to support a modern medical school and teaching hospital in Peking.

Aided two other medical schools and twenty-five hospitals in China.

Assisted premedical education in several institutions in China and agreed to do this also in Bangkok, Siam.

Lent representatives to governments and institutions for various types of counsel and service.

Continued to support a disease reporting service of the Health Section of the League of Nations.

Contributed to mental hygiene projects, demonstrations in dispensary administration, organization of dispensary work in France, and to other undertakings in the fields of public health and medical education.

Alcohol Displaces Gasoline in Sweden.—Competition between American gasoline and Swedish alcohol and the proposal to relax Sweden's liquor control in favor of the latter has become the subject of warm discussion by motorists in Stockholm. It was all started a short time ago when a Swedish built motor car driven by Swedish sulphite alcohol won a thrilling victory over eleven foreign built cars driven by gasoline. Later the same car took on thirty-six foreign competitors, and when the alcohol pushed it along into third place the driver and mechanician were given a patriotic ovation on the spot.

Now comes the question of how to be sober while boosting home industries. It is not hard for Sweden's thirsty citizens to find friends who know enough about chemistry to make a highly pleasing drink out of sulphite alcohol. Hence, the government authorities have kept the liquid under a ban against general use for industrial purposes. But love of country comes first, and if a Swedish car can beat even American cars—well, the Royal Swedish Board of Trade and the Swedish Liquor Control Board have both recommended the repeal of the restriction of sulphite alcohol. It is said that if the manufacturer pours a lot of methylethylketone, or something like that, into the alcohol, it is made unfit for human consumption. That may be the solution of the problem.

Sulphite alcohol is a byproduct of chemical wood pulp, and the factories in Sweden have a capacity of about eight million gallons a year. Last year, however, only about six hundred and fifty thousand gallons were manufactured.

New Publications Received.

(We shall publish in future full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we shall review those in which we think our readers are likely to be interested).

RECOMPENSE. By Robert Keable. New York: G. P. Putnam's Sons, 1924. Pp. 339.

THE SAFETY PIN. By J. S. Fletcher. New York: G. P. Putnam's Sons, 1924. Pp. 339.

PSYCHOANALYSTS ANALYZED. By P. McBride, M.D. London: William Heinemann, Ltd., 1924.

DISCOURS DE LA NATURE DE L'AIR. By Edme Mariotte. Paris: Gauthier-Villars et Cie, 1923. Pp. 118.

RADIUM REPORT OF THE MEMORIAL HOSPITAL. Second Series, 1923, New York: Paul B. Hoeber, Inc., 1924. Pp. 293.

THE EINSTEIN THEORY OF RELATIVITY. By Garrett P. Serviss. New York: Edwin Miles Fadman, Inc., 1923. Pp. 96.

APPLIED PATHOLOGY IN DISEASES OF NOSE, THROAT AND EAR. By Joseph C. Beck, M.D. St. Louis: C. V. Mosby Company, 1923. Pp. 280.

DIET FOR CHILDREN (AND ADULTS). By Lulu Hunt Peters, M.D. New York: Dodd, Mead and Company, 1924. Pp. 313.

COLLECTED PAPERS ON MECHANOTHERAPEUTICS. By Edgar F. Cyriax, M.D. London: John Bale, Sons & Danielsson, Ltd., 1924. Pp. 472.

GASTROPATIAS DE ORIGEN RENAL. Estudio Clinico y Patogenico. By Juan Raul Goyena. Buenos Aires: La Semana Medica, 1924. Pp. 191.

THE BABY'S HEALTH. By Richard A. Bolt, M.D. National Health Series. New York and London: Funk and Wagnalls Company, 1924. Pp. 37.

THE INSULIN TREATMENT OF DIABETES MELLITUS. By P. J. Cammidge, M.D. (Lond.), D.P.H. (Camb.) New York: William Wood & Co., 1924.

PERSONAL HYGIENE. The Rules for Right Living. By Allan J. McLaughlin, M.D. National Health Series. New York and London: Funk and Wagnalls Company, 1924. Pp. 63.

COMMUNITY HEALTH. How to Obtain and Preserve It. By D. B. Armstrong, M.D. National Health Series. New York and London: Funk and Wagnalls Company, 1924. Pp. 62.

AN INTRODUCTION TO THE STUDY OF SECRETION. By Swale Vincent, LL.D., M.D. New York: Longmans, Green and Company. London: Edward Arnold and Company, 1924. Pp. 168.

THE ANTIDIABETIC FUNCTIONS OF THE PANCREAS AND THE SUCCESSFUL ISOLATION OF THE ANTIDIABETIC HORMONE—INSULIN. By Professor J. J. R. MacLeod and Professor F. G. Banting. St. Louis: C. V. Mosby Company, 1924.

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prompt and uncomplicated recovery almost always calls for the systematic use of an efficient restorative tonic—a preparation that will place the least possible burden on the digestive and assimilative functions of the body, but will at the same time supply the support so urgently needed by weakened and exhausted tissues.

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J. R. Wood, M. D., *Physician Sheltering Arms Hospital, Paint Creek, W. Va., U. S. A.:* "I have been using VALENTINE'S MEAT-JUICE in the treatment of Typhoid Fever cases in the Sheltering Arms Hospital, for the last two or three weeks, with the most gratifying results both to the patient and physician. I consider it the best preparation of animal food I have ever seen, in fact, the only one I have ever had any success with."

Dr. Genevaix, *Assistant Surgeon-Major, First Class, Hotel Dieu, Creusot, France:* "The patients to whom I have given the excellent preparation, VALENTINE'S MEAT-JUICE, have found their general condition rapidly improved by it, and in the convalescence from continued Fever (Typhoid and Para-Typhoid) it gives the best results."

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Miscellany.

Deterioration of Procaine Solutions.—M. L. Bonar (*Journal of Laboratory and Clinical Medicine,* March, 1923) found practically no deterioration in the anesthetic properties of procaine solutions standing over a period of several months. He found no increase in toxicity or irritability except in cases of gross contamination. The yellow color change is not an index of a change in anesthetic, irritating or toxic properties, but is apparently due to an oxidative process. The sediment in procaine solutions may be due to the growth of molds, the spores of which may be present in the original preparations, and indicate contamination long before an increase in irritability and toxicity develop. Therefore procaine solutions are stable, and if kept sterile and out of contact with air will remain unchanged indefinitely.

Gentian Violet in the Treatment of Empyema. Robert C. Davis (*American Journal of the Medical Sciences,* November, 1923) thus describes his technic. The chest over the fluid area is anesthetized with 0.5 of one per cent novocaine. The aspiration is done with a fifty c. c. Luer syringe connected to the needle by a piece of rubber tubing two or three inches long fitted with adaptors to fit syringe and needle. This prevents air entering the chest at the time of disconnecting syringe and needle and tends to avoid injury to pleura and lung by movements of the patient or of the instrument. An assistant maintains the position of the needle. The fluid is aspirated until the cavity is almost dry, which is determined by the patient beginning to cough. One precaution observed during the first aspiration is not to take out too much when a large amount of fluid is present. Then one half as much aqueous solution of gentian violet (1-2500) as fluid removed is slowly injected into the cavity. The fluid is first warmed to body temperature. This fluid is allowed to remain until the next aspiration, which should be done in from one to five days, depending upon each individual case. During the second and following aspirations a solution of 1-1000 is used.

Combined Craniotomy and Bismuth Treatment in Cerebral Syphilis and General Paralysis.—H. Dufour (*Bulletin médical,* January 12, 1924) calls attention to the assistance afforded by craniotomy in enhancing the efficacy of drug treatment in syphilitic brain diseases. He reports the case of a man in whom, seven years after syphilic infection, there appeared headache, dizziness, vomiting and later papilledema. These conditions were only temporarily improved by antisyphilitic treatment. A decompression operation being then performed, without incision of the dura, the papilledema showed a very gradual and slight diminution; when bismuth treatment was resumed, however, rapid recovery took place. In another case, the diagnosis was cerebrospinal syphilis with mental disturbance simulating general paralysis, without cerebrospinal hypertension. Antisyphilitic drugs failed. The pupils were unequal, distorted and of the Argyll Robertson type. The patient was tremulous, unsteady, apathetic, with exaggerated reflexes and positive Babinski sign. Simple decompression was performed on the left side and bismuth injections resumed as soon as healing had occurred. Three weeks after the operation the patient was discharged, walking more easily, with the memory improved and the psychic disturbances gone. The patient was enabled to work, and the genital function returned. The anisocoria and pupillary irregularity were reduced and the Babinski sign lost on the left side, reduced on the right. The last examination was made about four months after the operation. A third case was one of typical paresis, requiring constant supervision and practically uninfluenced by antisyphilitic treatment. Decompression was performed on the left side and bismuth injections quickly resumed. After some weeks marked improvement was visible, the patient reading the newspapers, helping the orderlies and serving meals to the patients. Memory and consciousness were improved, tremor diminished, the patient remained quiet and the lymphocytes in the cerebrospinal fluid were reduced from twenty-five per cubic millimetre to nine. The author believes this plan of treatment generally indicated where the preventive treatment of cerebral involvement has been inefficient or the usual treatment of the developed brain disease has failed to check it.

Efficient Treatment for Resistant Cases of Pyelitis.—J. Spencer Davis (*Archives of Pediatrics,* October, 1923) states that the treatment of this infection should begin with the removal of any foci of infection, if practicable, followed by alkali or urotropin and a laxative if needed. Some writers prefer the alkaline treatment alone, while others alternate urotropin and acid sodium phosphate with alkalies. The curative value of vaccines is doubtful and only temporary. The use of foreign proteins, such as typhoid vaccine and various serums, is frequently followed by rather severe reactions. The author has used injections of whole blood unaltered by anticoagulants in cases that were refractory to treatment. The blood is usually obtained from one of the parents and immediately injected into the abdominal wall. The smallest effective quantity of blood was found to be twenty c. c. In the severer types of recurrent infections, this amount was found to be inadequate and larger quantities up to one hundred c. c. had to be given. As many as five injections have been given, but in many cases a single injection was all that was necessary. After the injection no medication is given.

Treatment of Obstruction of the Colon.—Arthur H. Burgess (*British Medical Journal,* September 29, 1923) approaches the discussion of the appropriate treatment of acute obstruction of the colon mainly from the clinical viewpoint and considers the cases as the patients present themselves prior to the operation under three groups: 1. Where we cannot tell whether the obstruction is in the ileum or the colon. 2. Where we can locate the obstruction to the colon, but its situation therein is not known. 3. Where the site of obstruction in the colon can be definitely ascertained. If in any case, the location of the obstruction can be assigned to the colon but is not known definitely and if there is no ground for suspecting a volvulus or internal strangulation, the author believes that cecostomy should be the only immediate procedure.

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Industrial Hygiene in New York.—The development of our modern industrial system from the trade guilds of medieval times, which has been one of the most potent factors in building up the type of civilization which we enjoy at the present day, has been attended unfortunately with an excess of attention paid to attaining economic success, to the detriment of the individual worker's health and general wellbeing. Not until lately has the employer begun to realize that it is not only the humane thing to do, but actually to his economic advantage to provide his employees with hygenic conditions in their work.

The importance of industrial hygiene in a community with so many diversified manufacturing and commercial interests as Greater New York, and especially the Borough of Brooklyn, is selfevident. Brooklyn ranks as the fourth largest manufacturing centre in the country, and contains about 8,000 factories, employing 200,000 workers. In 1915 the city established a Division of Industrial Hygiene to study conditions, to help guard against hazards in industry, whether predisposing to disease or to accidents, and to secure the best possible working conditions from a hygienic viewpoint. The national and state legislatures have been somewhat slow in passing laws for the protection of industrial workers; in fact, the United States permits conditions in some factories which are far below standards required in European cities, although our best equipped factories are probably comparable to those of like grading in Europe. For instance, in this country there is more recklessness in the handling of trade poisons. For example, in the making of storage batteries in the United States in 1914 the rate of poisoning was 17.9 per cent., while in Great Britain it was only two per cent.

The chief health risks in industry at the present time have been classified as follows: Dust, fumes, gases, vapor and acids; harmful bacteria; improper ventilation; improper lighting; extremes of temperature and of humidity; excessive strain leading to fatigue; compressed or rarefied atmosphere; unguarded, poorly taken care of, or carelessly operated machinery; fire hazards. The Division of Industrial Hygiene is making a point of studying and getting data on each of these risks, whether they occur singly in certain establishments, or are found in combination, as is frequently the case. Negligence and carelessness are responsible for many cases of injury, and for this reason a safety first campaign by means of lectures, distribution of circulars, and educational posters is being constantly carried on. Unguarded machinery has, in the past, been one of the most potent sources of danger, but such conditions are rapidly being remedied. To prevent fatigue and strain, the relation of natural rhythm to movements and its psychological effects are being studied, and the workers are being taught how to do their work efficiently with the least expenditure of energy. The industrial workers are also being instructed in first aid measures to enable them to be of assistance in accidents and minor injuries. Industrial managements are being encouraged to establish first aid corps, and to install a first aid and minor surgical dressing room, with a nurse in attendance. The importance of submitting to periodical physical examinations is emphasized, and the fact that no new worker should be accepted until he has been examined by a physician to determine his fitness. Instruction in methods of prevention is given, and employers are urged to reduce risks to the minimum in all possible ways, and to make their factories as clean, healthful, and attractive as possible.

The results to an industry where conditions of labor are hygienic will be: 1, the lessening of the labor turnover; 2, diminution of time lost; 3, increase of contentment and happiness on the part of the employees; 4, augmented wages earned and output attained.

Medical Education Around the World.—During 1923 the Division of Medical Education of the Rockefeller Foundation continued to gather facts about the medical schools, numbering approximately 450, which are to be found in seventy-four countries of the world. Much of the material was secured by post, but a good deal was brought home by representatives who personally visited schools in nineteen countries. The data collected have to do with buildings, equipment, curriculum, staff, annual budget, and other significant points.

The returns so far received reveal a worldwide distribution of certain national influences. Thus British ideas and methods give character in varying degrees to medical schools throughout the Empire, from Canada to the Cape and from Halifax through Hongkong to Bombay. The French or Latin tradition predominates in Southern and Western Europe, in Algeria and Syria, in Central and South America, and in Indo-China. German medicine is found to be fundamental in Central and Northern Europe and in Japan. In addition to these variations due to historical causes, the medical schools of the world display wide differences in resources, personnel, standards, and aims, due to varying racial, economic, governmental, and social conditions.

International cooperation between medical centres the world over is tending to make these differences less pronounced. One aim of the Foundation is to facilitate the contracts and intercommunications by which this international exchange of ideas is accomplished. By aiding schools to send official representatives abroad, by inviting commissions from one country to visit another, and by stimulating an international exchange of professors, it is hoped that gradually fruitful interchanges and progressive adaptations will take place.

Since the foundation began to have a part in medical education it has aided in varying degrees 117 medical schools and thirty-one different countries. The policy has been: 1, to help for the most part only such medical centres as are likely to make significant experiments, demonstrate progressive methods, and set standards which will have a wide influence; 2, to contribute only a part of the funds needed for a given project, with the understanding that the remainder will be provided from other sources; 3, to assume no responsibility for administration or supervision of institutions to which gifts have been made; but simply, 4, to help faculties and trustees to hasten the realization of plans which they have worked out and in which they have genuine faith. Furthermore, 5, no assistance is ever given to a medical school until after a representative of the Division of Medical Education has visited it and conferred personally with its teachers and administrators.

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The World's Oldest Hospital.—In a recent issue of the New York *Times*, a letter to the editor gives interesting data on what the writer considers can rightly be called the world's oldest hospital. This hospital is situated on the Island of San Bartolomeo, Rome, on the site of a very ancient temple. It is known as the Hospital of the Fate Bene Fratelli (Do Good, My Brethren) and also as the Hospital of San Giovanni di Calabita. According to tradition, in the year 291 B. C., a plague was raging in Rome. The Sibylline Books recommended bringing to Rome from Epidaurus a statue of the god Æsculapius as a remedy for the stricken city. In the Lateran Museum an ancient basrelief represents the journey of this image on a barge on the Tiber. On an island in the river a temple was built to receive the statue, and here for centuries the Romans came to be healed, leaving as tokens of gratitude for cures small replicas in terra cotta of parts of the human body, which are still being unearthed. During the Christian era, the island was dedicated to Saint Bartholomew, and in the course of time the present hospital built on the site of the ancient temple to Æsculapius.

Japanese Children Show High Intelligence.—Japanese immigrant children have as high intelligence as the average American school child, according to data made public by Prof. Robert H. Gault, of Northwestern University, after a series of tests of the Japanese children in the public schools of Denver. The Stanford-Binet test of mental alertness was used, but since the children were handicapped by language, the tests were modified to some extent. The children showed a distribution of intelligence similar to what has been found in native born white children. Eight per cent. of them had much more than average intelligence. Similar and earlier studies have indicated that oftentimes Japanese children as a whole are much superior in intelligence to white children living in the same social environment. These data presented by Professor Gault do not indicate much difference from the intelligence of white children.

Safeguarding the Succession of Scientists in Germany.—The plight of young medical scientists in the Central European countries and the Balkans has recently become so critical that the continuity of workers has been seriously threatened. In Germany especially the danger of a breakdown has aroused the anxiety of the scientific world. German medicine, for example, has contributed so much to the common fund of knowledge and technic that the turning of large numbers of young medical investigators to other pursuits would sooner or later affect medical progress as a whole.

The Rockefeller Foundation, in the interest primarily of modern medicine, therefore asked a committee of German scientists to select promising younger workers who if they had no aid would be compelled to turn to other pursuits, and to appoint them to resident fellowships. These provide small stipends together with sums for laboratory supplies and experimental animals. In 1923 the committee granted one hundred and ninety-four of these fellowships. The trustees have authorized the extension of this plan to other countries in which similar conditions may be found.

New Publications Received.

(We shall publish in future full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we shall review those in which we think our readers are likely to be interested).

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Miscellany.

Memorial Meeting for the Late Dr. Biggs.—On April 29th the New York Academy of Medicine held a memorial meeting in honor of the late Dr. Hermann M. Biggs. The speakers, all of whom had been intimately associated with Dr. Biggs and his work, were: Dr. William H. Welch, director, Johns Hopkins School of Hygiene and Public Health, who presided; Dr. Walter B. James, emeritus professor of medicine, Columbia University; Dr. George D. Stewart, president of the Academy of Medicine; Dr. William H. Park, director, Bureau of Laboratories, New York City Health Department; Dr. Matthias Nicol, Jr., State Commissioner of Health; Mr. Homer Folks, secretary, State Charities Aid Association; Mr. Ira A. Place, vice-president, New York Central Railroad, and Dr. Livingston Farrand, president, Cornell University.

Dr. Welch spoke briefly of the lifework of Dr. Biggs, emphasizing the broad general medical training which he had, and which so well fitted him for his success in later years, both in public health work and private practive. Dr. Park and Dr. Nicoll outlined the progress made under Dr. Biggs by the city and state health departments respectively, and Mr. Folks spoke of his association with private public health organizations. Dr. Farrand, as the last speaker, paid a high tribute to the character of Dr. Biggs, when he said in part: "The disorder of a war torn civilization is characterized by a reign of prejudice and an exhibition of loose thinking and hasty judgment, which is nowhere more noticeable than in this complacent democracy of ours. It is minds and characters like those of Hermann Biggs of which this country stands most in need."

Physical Effects of Starvation.—What long continued famine does to human beings is vividly shown in the form of a coldly scientific article on the effects of the recent famine in Russia recently published as a translation from the work of a Russian scientist, Prof. Alexis Ivanovsky, of the University of Kharkov. Not only loss of weight, but a shrinking of several inches in stature and a general drying up of the whole bodily frame similar to that experienced in advanced old age was experienced by Russians suffering from a three year shortage of wholesome food. When it became evident that a period of famine was approaching in Russia, and that it threatened to be of long duration, Professor Ivanovsky enlisted his colleagues in an investigation of the physical effects of starvation. The observations were made on 2,114 individuals, male and female, in all parts of Russia, and were continued for three years, each individual who survived being measured six successive times at intervals of six months.

The most universal and obvious effect of the famine was loss of weight. Not one individual was found whose weight had not diminished, while in a great number of cases the loss was as much as thirty per cent. of the normal weight. Fat was the first to be sacrificed and by the end of the famine had almost completely disappeared in all the subjects measured. After that was used up, the muscles wasted away, then some of the internal organs, such as the liver or pancreas, were affected, while the essential organs, such as the heart and the central nervous system, were little affected.

Bodily stature declined in nearly all cases, the average loss being from 1.5 to 2.6 inches in men, and from 1.4 to 1.9 inches in women. The loss was greater among young persons, but was made up by them more rapidly when food again became adequate. The shape of the head changed. In the average famine sufferer it became relatively broader, the front and back diameter shrinking more than the transverse. The length of the face decreased less than its breadth, resulting in a typically lean, narrow visage. Similarly the nose became narrower and thinner. "In very emaciated people," Professor Ivanovsky states, "the hair grew more slowly, fell out prematurely, and tended rapidly to become gray. The eyes became like those of old people, the skin lost its elasticity and became wrinkled, the gait became weak and uncertain, the body bent. The sexual instinct became very weak or even disappeared entirely. The number of births decreased enormously, while the number of children born prematurely or stillborn increased, as did those born with various deformities."

Because of the irregular diet of indigestible food, ulcer of the stomach became a common complaint. The body largely lost its power of resistance, simple boils easily became carbuncles, and abscesses of the hands were common as the result of ordinary infections. Finally, Professor Ivanovsky considers the psychological factors of depression and apathy to have been of great influence, even to the extent of causing changes in the body structure.

High Rate of Mortality Among Young Women.—Startlingly heavy mortality among young women from twenty to thirty years of age has been found by Rollo H. Britten, statistician of the United States Public Health Service, in an analysis of recently issued Census Bureau figures. The reason for this peculiar rise in death rates is obscure, Mr. Britten states, and cannot be explained as due to violent causes. There has been an increase, he points out, in deaths from causes connected with childbirth. Tuberculosis, influenza, and pneumonia are also evidently involved in the excess rate among the young women. Other facts brought out in the analysis are that cities show a more rapid decline in mortality than do the rural districts; that persons of mature age show an increase in length of life; and that there has been a continuation of the general improvement in the expectation of life at birth, with colored persons showing greater improvement than the whites.

Sanitation, Not Serums, Conquering Tuberculosis.—Hygienic measures alone, without the use of any serums or vaccines, have been responsible for the great decrease in mortality from tuberculosis during the last thirty-five years, said Dr. Hans Zinsser, of the Harvard Medical School, in a public lecture in Boston on the tuberculosis problem. The death rate from the disease in 100,000 of population had been reduced from 326 in 1888 to 114 in 1920, he said. There was no specific nor serum that was a valid protection from or cure of the disease, the lecturer stated. Many had been tried but none had proved reliable.

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Latin as Language of Science.—Latin was urged as the ideal international language for scientists by Prof. Roland G. Kent of the University of Pennsylvania at the recent meeting of the American Philosophical Society. It was so used until about 1800, he said. Latin excelled artificial languages because it was more definite in meaning and more precise in expression, Professor Kent stated, drawing added arguments in its favor from its use by zoologists and botanists in the naming of plants and animals, as well as by the anatomist, the physician, and the druggist. He believed that Latin should be reserved for abstracts and results, articles of permanent value, and books of an epoch making character.

Young Animals Are Insulin Producers.—The insulin producing parts of the animal pancreas, the minute patches known as the islands of Langerhans, are more numerous in childhood than in infancy or adult life, according to a paper presented to the American Association of Anatomists by Dr. Milton D. Overholser, of the University of Missouri. The statement was based upon the examination of the pancreas in many albino rats at different ages corresponding to infancy, childhood, and adult life. He found that the number of islets showed a progressive increase until the eighth week of life, and then a decline to a fairly constant number maintained through adult life. The average number of islets was in inverse proportion to the body weight of the animal.

Cut Flowers Kept Fresh by Aspirin.—Cut flowers may be prevented from fading by giving them an aspirin tablet. Norman D. Keefer, pharmacist at the State Sanitarium at Mont Alto, Pa., states that by this method he has not only preserved flowers several days beyond the time when they would ordinarily fade, but has revived them when wilted. The experiments were conducted with chrysanthemums. Some of them were put into water to which an aspirin tablet had been added; the others were put into plain water. Kept under conditions otherwise the same, the drugged blooms outlasted the others by three days. In another case, flowers which had stood in a hot room over night and were badly wilted, were given fresh water to which an aspirin tablet had been added. They revived in two hours, looking as fresh as they did when picked the day before. The leaves, however, remained wilted. The aspirin acts as an antiseptic, interfering with the enzyme which causes the clogging of the stem at its cut surface.

More Physicians Treating Venereal Diseases.—The number of physicians treating venereal diseases appears to be constantly increasing. According to the records of the Division of Venereal Diseases, 2,853 physicians found at least one case of gonorrhea or syphilis during 1923, an increase of 669 over 1922. The total number of physicians submitting specimens to the laboratory in accordance with the Sanitary Code regulations is in reality much larger than these figures would indicate since 935 physicians submitted specimens in 1922 who did not do so in 1923 and 1,367 sent in the required specimens during 1923 who had not done so in 1922. The total number who submitted specimens during the two year period 1922 and 1923, constitutes approximately fifty per cent. of the registered physicians in the State, exclusive of New York.

New Publications Received.

(We shall publish in future full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we shall review those in which we think our readers are likely to be interested).

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Medical Journal and Record

Respiratory Supplement

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NEW YORK, WEDNESDAY, FEBRUARY 6, 1924

Value and Limitations of the Röntgen Ray in the Diagnosis of Pulmonary Affections*

BARNETT P. STIVELMAN, M.D.,
Bedford Hills, N. Y.,

It is perhaps fair to state at the outset that there can be no doubt that the intrinsic value of the röntgen ray far surpasses that of any other laboratory examination; that because it brings the human lungs within the range of that special sense upon which we place greatest dependence, it is a method of inestimable value, and that in many cases it is the only method which holds forth any hope of reaching a correct diagnosis. However, in the study of pulmonary conditions it has suffered and may continue to suffer in reputation because, on the one hand, many who are unfamiliar with the type of evidence furnished by this method have expected too much of it, and on the other hand, many specializing in its use have exaggerated its importance and have made claims which are unwarranted by the results obtained. Moreover, because of the supposed infallibility of this method, it seems that the burden of diagnosis of pulmonary disease has in some medical circles actually been transferred from the shoulders of the clinician to those of the röntgenologist and the x ray has been used virtually to the exclusion of the older methods of examination.

It is, therefore, perhaps not untimely to examine into the value and limitations of the röntgen ray in the diagnosis of some pulmonary affections, and though I may only scratch the surface of this most important subject, I shall endeavor to point out some of the difficulties in the interpretation of chest röntgenograms.

It is now universally accepted that because of their anatomical and physiological relation to the lungs, the tracheobronchial glands and the cluster of glands in the hilum region are the first to be involved when large numbers of tubercle bacilli, regardless of the portal of entry, reach the pulmonary tissues. These glands, reacting to the noxious invader undergo inflammatory, and later permanent structural changes which increase their size and make them less permeable to the röntgen ray, with the result that they cast a larger and denser shadow on the röntgenogram than the normal glands. Clinicians will agree that no known diagnostic method will so surely demontrate the existence of diseased glands as the x ray.

On the other hand, these glands are frequently the despair of the röntgenologist because tuberculosis is not the only etiological factor in the causation of this glandular enlargement. The hilum glands increase in size and density in bronchitis and bronchiectasis, and often attain even a larger dimension during and after the exanthemata and more especially measles, whooping cough and diphtheria. Moreover, such glandular enlargement appears early in the course of pulmonary abscess and persists long after most nonspecific pneumonic lung processes. The röntgen appearance of these glands does not point to any etiological relationship, and it is extremely hazardous to make, as is often done, a diagnosis of tuberculous tracheobronchical adenopathy from the x ray plate alone. Many children are often deprived of an education, separated from their parents, and often banished to distant health resorts, on the strength of the röntgen ray appearance of the hilum region. The x ray in such instances is of quantitative rather than qualitative value, and it is the clinical history and the discovery of associated conditions that will solve the problem, and not the röntgenogram. A history pointing to tuberculous toxemia in association with large tracheobronchial glands would suggest that the patient is in need of treatment. On the other hand, when no such clinical symptoms are complained of, no diagnosis of active disease is justifiable even in the presence of such glandular enlargement, and the patient should be left severely alone. It is pertinent to add that the denser the shadow cast by these glands on the röntgenogram the less the clinical value of their discovery, because such shadows show that scarring, fibrosis and calcification have taken place in these glands, which under the circumstances can be placed in the category of harmless historical landmarks.

*Read before the German Medical Society of New York, May , 1923.

PERIBRONCHIAL INFILTRATION.

It requires no expert in physical diagnosis to discover an advanced tuberculous parenchymatous lung lesion, nor a röntgenological wizard to find a similar condition on carefully taken röntgenograms, but peribronchial tuberculous lesions usually defy detection on physical exploration of the chest. The röntgen ray alone will disclose the peribronchial thickening, and sometimes the beaded pussywillow appearance along the ramification of the bronchial tree. On the other hand, similar shadows are cast by conditions other than tuberculous peribronchial infiltration. Chronic bronchitis associated with emphysema and asthma, and bronchiectasis, anthracosis and silicosis are often accompanied by such x ray finding and there are rare cases of lymphangitis malignancy, the röntgen ray plates of which are indistinguishable from tuberculous peribronchial infiltration. Here, as in the first instance, it is the clinical history of the case, the finding of associated conditions, the history of exposure to the dusty trades, and not the x ray, which will clinch the final diagnosis. A diagnosis of active peribronchial tuberculosis should not be made unless there is clinical evidence of tuberculous toxemia, such as elevation of temperature, acceleration of pulse, loss of weight and strength, cough and other findings, in addition to the röntgen ray findings.

Many patients are sent to sanatoria and hospitals for the tuberculous because of the accidental discovery of peribronchial thickening which frequently denotes nothing abnormal or may be due to conditions which require different modes of treatment entirely.

EARLY TUBERCULOSIS.

The röntgen ray is the most reliable method whereby the true extent of any advanced tuberculous lung lesion can be accurately determined. In this respect it surpasses by far the findings of the keenest clinician. It is different in the case of early tuberculosis. Here the clinical history and physical findings at times point to the existence of a small lesion at either apex when the röntgenogram is frankly negative. It appears, therefore, that in a given case a negative röntgenogram does not necessarily exclude the presence of pulmonary tuberculosis. The physical findings and particularly the history of tuberculous toxemia, etc., should be relied upon in arriving at a positive diagnosis regardless of the negative x ray findings. On the other hand, when the history and physical findings are frankly negative and the x ray shows small discrete tubercles or evidence of slight fibrosis at one or both apices, no alarm need be caused at their discovery because the very presence of these discrete and old lesions indicate that the organism has effectively conquered the invading tubercle bacilli and these shadows represent, as has been aptly stated, "the monuments commemorating the battle won by the fighting forces of the host."

TUBERCULOUS AND NONTUBERCULOUS PULMONARY CAVITATION

Almost pathognomonic of pulmonary tuberculosis is the röntgen ray finding of an area of rarefaction or cavitation anywhere but particularly in the upper lung fields, especially if this area is surrounded by an appreciable wall and is situated in the midst of shadows signifying parenchymatous infiltration. It is almost pathetic to watch the keenest clinician miss fairly extensive cavitations which speak for themselves on the röntgenogram. The failure to elicit these on physical examination is due either to the fact that the communication between the cavity and its draining bronchus is temporarily blocked by a plug of mucus or sputum, or the cavity may be entirely filled with fluid, conditions which preclude the generation of those physical signs by which cavities are recognized. Basal cavities and cavitation in the hilum region and more especially pleural annular shadows, which are in reality a form of interlobar pneumothoraces, are more often missed than elicited on physical exploration of the chest, but almost invariably found on the röntgenogram.

However, a diagnostic pitfall can be avoided when it is remembered that not all areas of rarefaction or cavitation are of tuberculous origin. Such areas of rarefaction near the hilum region or basal fields may be due to extensive bronchiectasis resulting from chronic bronchitis, interstitial pneumonia, and changes secondary to pleural disease. These dilated bronchi are engendered by increase in intrapulmonary tension incident to long continued and distressing cough on the one hand, and traction on the outer wall of the bronchi by the contraction of the fibrous tissue when pulmonary sclerosis is present on the other. Indeed, it has long been known that not all areas of rarefaction are due to ulceration of the pulmonary parenchyma. Areas of rarefaction in the lung tissue may be due to abscess formation and when accompanied by collateral inflammation they are in their early stages indistinguishable from tuberculous cavitation on röntgen ray examination alone. Malignant metastatic nodules, when their circulation is shut off, may ulcerate and discharge their contents into the nearest bronchi and thus exquisitely simulate tuberculous cavitation, while streptothricosis and spirochetal pulmonary gangrene may be accompanied by extensive cavitation, which on röntgen ray examination alone are indistinguishable from tuberculous cavitation. In all such instances a painstaking study of the clinical history, symptomatology, reinforced by repeated physical exploration of the chest and particularly careful examination of the sputum, will lead to a correct diagnosis while reliance on the röntgen ray alone may leave cause for regret.

MILIARY TUBERCULOSIS.

The characteristic widely disseminated snowstorm appearance of röntgen ray shadows in acute miliary tuberculosis of the lungs may be simulated to a marked degree by certain forms of silicosis and anthracosis and particularly by miliary pulmonary malignancy and bronchiolitis. The röntgen ray in such cases cannot be relied upon for an accurate differential diagnosis. It is the clinical history pointing to the primary malignant focus or the occupational hazards the patient may have been exposed to that will clinch the diagnosis. A fatal prognosis has not infrequently been given on x ray findings of miliary pulmonary tuberculosis when in reality there existed a temporary bronchiolitis or a more or less innocuous anthracosis.

ACTIVE AND QUIESCENT PULMONARY TUBERCULOSIS

The discovery of a tuberculous lung lesion is of no greater significance than the determination as to whether or not this lesion is quiescent, or in a state of clinical activity. In the first instance, that is when the lesion is inactive, no treatment whatever may be necessary and the patient, under competent supervision, may be allowed to go about his business as usual. On the other hand, when clinical activity is diagnosticated, judicious treatment is to be instituted at once if recovery or an arrestment of the disease is to be attained. This is perhaps the most important problem in phthisiology. The question now arises, what assistance does the röntgen ray offer in the determination of the clinical activity of any given lesion?

Those who are forever on the lookout for a short cut in the practice of medicine and particularly those who enjoy a limited clinical experience claim to have little difficulty in finding evidence of clinical activity on the röntgenograms, and some go so far as to assure us that they are able to foretell certain pulmonary catastrophes as well as evaluate the degree of tuberculous toxemia from the appearance of the x ray plate. On the other hand, clinicians of widest experience do not feel quite so certain that such information can be gleaned from the röntgenograms, because the reparative and destructive forces which may be and frequently are simultaneously at work in any portion of the lung do not easily lend themselves to differentiation even on the autopsy table and areas of fresh tuberculization may be so situated as to be completely obscured by an old thickened pleura and thus elude the röntgen ray. Moreover, the newest and frequently the most active tuberculous foci are most easily penetrated by the x ray and cast but a faint and insignificant shadow on the plate. The collateral inflammation around the tubercles, which to some is the criterion of activity, is present in many nonspecific intercurrent infections which do not influence the tuberculous process adversely and is often absent in the most typical cases undergoing an exacerbation of tuberculous activity. Inquiry into the patient's complaints especially into symptoms signifying tuberculous toxemia, is the only means of determining the activity of any tuberculous process regardless of the x ray findings.

PULMONARY MALIGNANCY

The diagnosis of pulmonary malignancy has been much simplified as a result of the many recent reported studies. Indeed, the relative increase in the incidence of pulmonary neoplasm is in no small measure due to the fact that we are now on the lookout for, and better able to discover, these conditions antemortem. The röntgen ray is at times of inestimable value in the detection of some of these neoplasms, but it often fails us in the most complicated cases. It is a matter of common knowledge that early metastasis in the lung tissue cannot in the majority of instances be discovered without the aid of the röntgen ray, and not infrequently metastatic nodules of much larger size escape detection on most careful physical explorations of the chest only to be easily elicited röntgenologically. It is different in the case of primary pulmonary malignancy. Here the x ray shadow which is usually dense and homogeneous, especially when situated in the upper lung field, may exquisitely simulate an old fibroid tuberculous process with pleural thickening, pulmonary abscess, and localized or interlobar effusion.

Matters are further complicated when there is a pleural exudate secondary to the lung tumor. The röntgen shadow in this case is indistinguishable from an ordinary effusion or extensive pleural thickening. The age of the patient may not help in the diagnosis because both fibroid phthisis and pulmonary malignancy are found in patients of the same age group. The differential diagnosis will then rest on the clinical history and not the x ray. A history of pulmonary complaint of long standing, especially cough, hemopytsis frequent colds with elevation of temperature, when associated with bilateral disease and evidence of bronchitis and emphysema will speak in favor of pulmonary tuberculosis even though the sputum may give negative findings. A history of a recent pneumonic process or surgical intervention in the upper respiratory tract followed by profuse and foul expectoration, clubbed fingers and evidence of toxemia, will speak in favor of pulmonary abscess. Thoracentesis will help in the determination of the presence of a localized or interlobar effusion. On the other hand, a history of cough of more recent onset, in a patient past middle age, loss of weight, troublesome and persistent pain on the involved side of the chest, and particularly early dyspnea in the absence of cardiorenal disease, is suggestive and requires further investigation. If in addition to such a history, physical exploration of the chest discloses an absolute unilateral lesion with a flat note on percussion, feeble breath sounds or cornage and some evidence of glandular enlargement, especially when tubercle bacilli cannot be found in the sputum, a diagnosis of pulmonary malignancy may safely be made. When there is a coexisting effusion, a diagnosis cannot be arrived at röntgenologically unless some of the exudate is removed and replaced by air in accordance with the method recently described.

ACUTE AND CHRONIC PNEUMONIC PROCESSES

Acute pneumonic processes are easily identified röntgenologically but it is well to bear in mind that even in such instances the evidence is quantitative and not qualitative because the x ray shadow does not point to the etiological nature of the pathological process. Atypical lobar pneumonias are frequently confounded with pneumonic phthisis and unless the clinical course of the disease is carefully studied and other laboratory findings consulted a differential diagnosis may be impossible. The same condition obtains in chronic interstitial pneumonia. Here the röntgen evidence is in itself rarely sufficient to point to a definite diagnosis. Unilateral chronic pleuropulmonary tuberculosis, especially the types which follow pleural effusions and the suspension of pneumothorax treatment, is indistinguishable röntgenologically from interstitial pneumonia of nonspecific origin. In such cases we must resort to the clinical history, and especially, careful sputum studies, for a differential diagnosis. A history of cough, expectoration and recurrent attacks of fever, night

sweats and other evidence of toxemia will point to pleuropulmonary tuberculosis, whereas a history of lobar or repeated bronchopneumonia or empyema treated by aspiration or thoracotomy together with signs and symptoms of bronchiectasis will speak in favor of chronic interstitial or fibroid pneumonia.

PULMONARY SYPHILIS.

In recent years the subject of pulmonary syphilis has been widely discussed. The time has not yet arrived when the frequency of its occurrence can be correctly estimated. Suffice it to say that it is seen less often than some röntgenological reports would indicate. Whether it is encountered in the form of diffuse fibrosis or gumma of the lungs a definite diagnosis cannot be reached on the basis of a röntgenologic examination alone. In the first instance the plate cannot be distinguished from pulmonary sclerosis of nonspecific origin and in the latter case it may exquisitely simulate malignant metastasis, localized pleural effusions, pulmonary abscess and at times patches of frank pulmonary tuberculosis. Here again it is the clinical course of the disease, the results of the physical, sputum and blood examinations that must determine the true nature of the affection.

I have attempted to delineate the value and limitations of the röntgen ray in the diagnosis of the more prevalent pulmonary conditions and hope that I succeeded in pointing out the pitfalls in the interpretation of some röntgenograms. I have omitted the discussion of the various types of pneumothorax, pleural effusions and bronchial affections for obvious reasons. The question as to which method of examination, physical or röntgenological, is supreme, is beside the mark. Both methods are adjuncts of the greatest value to the history, particularly if we are informed of their limitations. To depend upon one method to the exclusion of the other is to invite diagnostic disaster. It is no less the duty of the physician to collect, coordinate and weigh carefully the evidence discernible by all methods before arriving at a final diagnosis as it is the legal obligation of the judge to examine all witnesses before pronouncing a verdict.

Frenzied Therapeutics in Tuberculosis

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In our endeavor to find some therapeutic agent that will cure tuberculosis or tend to eliminate certain of its disagreeable symptoms, we have built up an armamentarium that bids fair to bury the patient under an avalanche of drugs and serums.

Let it be understood in the beginning that I am not a therapeutic nihilist, and let it be further understood that I have treated tuberculosis by both methods, the sane and the insane—the drugless and the drugged, and after seventeen years devoted to this special work I am firmly convinced that the tuberculous patient is, in many instances, treated to death.

The days of mysticism in medicine are over. The tendency of the honest members of the profession is to play their hands, face up. We leave secrecy to the quacks and charlatans and allow them to imbue their victims with the depth of their superhuman power. We have nothing up our sleeve, so to speak, that even hints at the cure of tuberculosis, and the physician who lays claim to such ability is either a fool or a careless handler of the truth.

You think perhaps I speak of the men who are granted to be fakers. Not so, for our own ranks are full of men who pose as tuberculosis specialists—many at the head of socalled reputable institutions, who try everything new that drug houses are wont to foist upon an unsuspecting profession, and after filling their patients full of the socalled specifics, and what is worse full of hope for speedy cure, discard the treatment for something still more recent and with still greater claims for efficiency. One need but glance over the digests of the world's literature for any given year to find scores of new remedies advocated which in the succeeding years' reviews will be discarded, to be replaced by something new or different. Is it any wonder when we find facts such as these practised by a supposedly honest profession, that the laity cross their fingers, and slightly wink the other eye at the mention of a quack cure?

Can we expect to have our opinions or our advice taken by the sick when they have so many times before been led along on slippery paths by a regular practitioner who had something just a little bit different and a little more efficacious than his colleague?

I think back a few months ago when my local county society decided to expose the Abrams treatment. This was done to the satisfaction of the county society, the American Medical Association and the National Tuberculosis Association, but not to the satisfaction of the laity. They felt sorry for the men whom the regular profession were prosecuting. It so happened that one of Abrams's disciples was a member of a local business men's club and was up for expulsion on the grounds of fraud. His lawyer made merry with the medical profession as a whole, and before the trial was over one would be almost forced to believe the Abrams practitioner a model of virtue and the medical profession a bunch of highwaymen. One argument that stands out in my memory was this:

"Doctor, you grant that many times the medical profession takes up some new drug or method of treatment and after trying it for a year or two, decides it is of no value and then discards it. Was this not true of tuberculin, mercury succinimide and many other remedies too numerous to mention? Will you grant this to be a fact? Why then should not the gentleman in question use the Abrams treatment until he is convinced of its value or of its worthlessness."

Do you not consider that a good argument, and are not the members of the medical profession to blame for making it possible for any attorney to use such argument with such telling effect? Try to combat it before a lay audience and you are doomed to failure.

When I first entered sanatorium work I felt that to hold patients in an institution it was necessary to offer them something definite—something they could not get outside. I was further imbued with the idea —and I still am—that patients do much better under institutional care than they do in boarding houses or their own homes. With this idea firmly rooted, I felt that anything which tended to keep them in a sanatorium was a justifiable method of treatment, and thus worked to that end. The hypodermic needle and syringe were worked overtime—vaccines and tuberculin were administered, plus iodine and guaiacol—the intestinal hormones, and many other substances. In fact, so imbued was I with the sanatorium care of the tuberculous, that I wrote a long article detailing my results. I think I almost convinced myself. As time went on one by one the various treatments were dropped. I remember how I tried thirty patients on a tuberculin experiment, taking thirty cases as nearly alike as it was possible to choose—giving ten Von Ruck's vaccine for tuberculosis—ten Denys's filtrate and ten nothing. At the end of a year if there was anything in favor of any group, the medal should have gone to the nontreated individuals. That was seven years ago and I have not used tuberculin in pulmonary tuberculosis since.

It is interesting here to briefly review the conclusions reached by F. Neufeld, formerly assistant to the late Robert Koch (1). He asserts that Wright's opsonin hypothesis is deficient as Wright did not substantiate his hypothetical deductions by animal experimentation. The clinical results by this method are no better than by the usual tuberculin treatment.

Animal experiments have shown that old tuberculin exerts no immunization effect whatever. The patient becomes very rapidly habituated to even increasing doses of tuberculin. Koch's expectations from his newer tuberculins have not been realized.

Neufeld considers that the experimental basis of the treatment by Deycke and Much with partial antigens is defective. In his opinion experimental proof is lacking, that Much's preparations are superior to other tuberculins, or that with their aid anything essentially different can be effected.

The use of acid fast cultures and other recent preparations have not satisfied the highest expectations that some entertained. This is true of Friedmann's vaccine.

Neufeld emphasizes the fact that there is no prophylactic vaccination against tuberculosis that is applicable to men. Children inoculated by the Friedmann method may contract the disease and die just as well as those who are not inoculated. He vigorously condemns the proposed immunization of children by injections of attenuated human bacilli or bovine bacilli.

The general findings of Neufeld are that none of the tuberculin preparations have ever displayed any immunizing action. There is as yet no method of vaccination available to man.

So many men are apparently horrified by the low grade secondary anemia in tuberculosis and immediately inject hypodermics of iron in some form or other into the unsuspecting patient. As a matter of fact, the average daily minimum intake to keep the body in iron equilibrium is between six to twelve mg. One finds in the ordinary diet between eleven and nineteen mg.—the average being sixteen mg., which one can see at a glance is more than sufficient to meet the iron demand.

In some work done by Rowe (2) he showed that iron ammonium citrate ten per cent. solution injected in one c.c. doses daily was efficient, but that it produced no better results by hypodermic means than by oral administration, and was much more painful. The old idea of gastric irritation is a relic of the days when they used the tincture of ferric chloride, an irritant preparation. There is no irritation from reduced iron—the ferrous salts or the organic preparations.

But why worry about iron anyway. The anemia of tuberculosis is secondary and when the cause is removed, the anemia corrects itself. Unless the red count is low and the hemoglobin is below eighty per cent., there is no occasion to administer iron in any form. The anemia will take care of itself in a very short time.

Besides there is another side to the iron question. Many investigators maintain that the administration of drugs has no effect on anemia. Whipple and Robscheit (3) produced secondary anemia in dogs by bleeding and then carried out a very exhaustive study as to the influence of various iron preparations in the regeneration of blood. These investigators state that their experiments give no support to the time honored custom of administering iron and certain other drugs in conditions of simple anemia and that the burden of proof rests with those who claim that any given drug is potent under such conditions. They attributed the improvement to dietetic conditions rather than to drugs. Musser (4) confirmed the work of Whipple and Robscheit.

Owing to the statement that tuberculosis is accompanied by a deficiency of lime salts, calcium has been frequently advocated. As early as 1783, Tourcroy suggested its use and some one has been suggesting it ever since. Moendl (5) reports on the intravenous use of calcium chloride for severe hemorrhage. He gives five c.c. of a ten per cent. solution every eight hours until the bleeding stops and continues it once a day for several days thereafter. I have given calcium chloride intravenously for hemorrhages, and after two weeks find the patient still bleeding. It's the old story over again—there is no cure for hemorrhage. The fact that we have a thousand and one remedies for bleeding speaks more loudly than words for their uselessness.

Just what calcium does in hemorrhage is open to question. The normal contents of calcium in the blood is more than is required for coagulation and further increase of calcium does not increase coagulability. Hess showed that the addition of calcium to hemophilic blood in vitro delays rather than hastens its coagulation, and it has not been shown that there is a deficiency of calcium in conditions such as hemorrhage, aneurysm, hemophilia, purpura, and other conditions.

Bastedo asserts that the use of calcium by mouth for hemorrhage is questionable, but states that the results of different experimenters in the effect of blood coagulability of calcium is conflicting. Many observers believe that the continued use of the drug increases the coagulation time.

As to its use in the treatment of tuberculosis *per se,* there is also a wide difference of opinion. For many years there has existed a tradition that those who work with lime are immune to tuberculosis, or if they have the disease, they become cured. Tweddell (6) states that manufacturers of lime and gypsum informed him that their employees were apparently immune to tuberculosis, claiming that the fine particles of lime and gypsum are carried by inhalation into the lungs. The lime coming into contact with the moist tissue of the lungs forms calcium hydroxide, which acts as a caustic and antiseptic and is then absorbed. Gypsum acts in the same way. He also cites observations and references to show that calcium added to the food not only helps prevent tuberculosis, but also favors the healing of wounds and fractures. Just as competent observers, on the other hand, (Kahn, 1914, and Mohler and Bergein, 1917, quoted by Sollman, 7) have shown that no such characteristic changes occur and extensive studies in calcium metabolism in tuberculosis fail to show that it exerts any favorable influence on the disease.

The copper treatment of tuberculosis was heralded a few years ago as a wonderful therapeutic aid. Many American clinicians immediately took up the method before any attempt had been made to verify the claims of the first clinical reports. The result was failure and disappointment again, both to physician and patient. Later, investigators have given their reports and their conclusions after exhaustive study, are not flattering to copper as a therapeutic agent in tuberculosis.

The same can be said for the vital dyes. Great assertions for these dyes were made by the Germans but American investigators, notably De Witt, are in total disagreement.

It is unfortunate but nevertheless true that many research workers rush into print with half completed experiments and make claims for this and that method which are wholly unwarranted from the evidence at hand. I recall a meeting of one of the national medical societies where I listened an entire morning to papers on the experimental side of medicine, and when the program was concluded I felt as though I had been running around in a circle. Thinking perhaps my brain had failed to grasp the deep principles established by such exhaustive work, I asked one of the best known men in the medical profession what he had gleaned after the morning's symposium. His reply was quite to the point: "It seems to me," said this gentleman, "that these physicians are attempting to justify their salaries to the directors of the institutions with which they are connected."

The success Chaulmoogra oil achieved in the treatment of leprosy naturally turned the thoughts of investigators to its use in tuberculosis, and a literature is already growing that bids fair to rival reports of other socalled cures of the past. So far the same criticism holds good—too few patients, too short a duration of treatment, and too hasty conclusions by men who are anxious to report results from the use of new and untried drugs.

When will the profession learn that end results are what is sought in any given treatment of tuberculosis, and not the temporary improvement of symptoms that go with the psychology of a new cure.

Others are now trying to aid in the treatment of tuberculosis by the introduction of tablets supplying at one swallow all the vitamines that the body may need for years to come. In fact if one listens to the ready tongue of the salesman or to the literature sent with the preparation, one is convinced that the use of garden vegetables is no longer a necessary adjunct to the average diet, and to place a few bottles of the tablets among your tuberculous patients will aid materially in effecting a speedy cure.

Let us review briefly the few really valuable adjuncts in the treatment of tuberculosis other than rest and graduated exercise, good food, fresh air, the oft discussed but never settled question of climate, and last but not least, proper supervision.

Above all, excepting those mentioned, I would place artificial pneumothorax. Regardless of opinions to the contrary this treatment has come to stay. Most of us who have used this method over a number of years and who have followed the patients carefully after discharge, are not as optimistic over the end results as we were in the beginning of the work. However, even considering the palliative results in many cases, the percentage of arrests are sufficiently great to feel that its use is indicated always in the proper type case, and that because of these palliative results, its use should not be restricted.

Next in order of usefulness I would place heliotherapy if one restricts its use to socalled surgical tuberculosis. There are a few who advocate its use in the pulmonary form of the disease, but their reports as to end results are not definite and must be taken with the proverbial grain of salt. Personally, I have never been able to convince myself that it has the least value in the pulmonary form.

Surgery of the chest has recently come into its own after many years of experimental work, and it seems necessary now to grant a place to thoracoplasty. When one finds it impossible to produce an artificial pneumothorax because of adhesions, and the opposite lung is free of activity, with the patient's general condition fairly good, this operation is justifiable.

The work in this country by men like Archibald of Montreal, has certainly added much to the safety of the operation and has placed it on a firm foundation as a valuable adjunct in the treatment of tuberculosis.

Many methods of immobilizing the affected side have been advocated after an unsuccessful attempt at artificial pneumothorax, but that which offers the best chance for real effectiveness, is a socalled pneumatic lung splint. This consists of a jacket made to measure, into one side of which is inserted a pneumatic bag which is inflated by a valve and stem leading to the outside. One can exert any pressure that the patient will permit and I know from observation that it will immobilize a chest. I have been trying to get the splint perfected ever since I had it called

to my attention, but as yet have been unable to get one that would hold air. Apparently this is due to a poor grade of rubber, but so far the manufacturers have been unable to remedy it. I know from my limited use of this splint that it offers a better method of immobilization than anything so far offered in lieu of artificial pneumothorax.

This, I believe, covers the field of useful adjuncts. There are many others advocated, but they are either useless or in the experimental stage and call for no comment.

By briefly referring to what I consider legitimate methods of treatment, I hope I have convinced my audience that I am not a therapeutic nihilist and further, I trust that I have made clear the utter uselessness of the vast storehouse of drugs and serums that are given to the unsuspecting patient with the hope of curing a chronic disease, that at best we expect in the majority of cases only to arrest the pathology and restore a physical condition somewhere nearly to par, with the added assurance of reasonable health for years to come. To offer more than this with our present knowledge of tuberculosis, is to create false hopes that sooner or later must be sadly broken.

I wish to express my thanks to Dr. E. A. Duncan, of El Paso, for some of the reviews on iron and calcium metabolism.

Accessory Sinusitis—Sources of Diagnostic Error

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Accessory sinus disease, so common an entity, so prosaic in its apparent simplicity, and a condition so easily diagnosed, does not present so simple a picture to the radiographer.

I have examined within recent years approximately three hundred cases of accessory sinus disease and during this time have been often impressed with the divergent opinions voiced by medical men concerning the value of radiographic examinations as a routine measure in all cases where such procedures would seem to be indicated. My purpose is to clarify some of the obscure points in diagnosis and to analyze some of the common sources of error.

Radiographic examination of the sinuses in the hands of a skilled radiographer is an invaluable aid in the interpretation of a diseased condition and I feel that greater cooperation between the practitioner and the röntgenologist, would prove of great value in the logical and successful treatment of a case. One is so prone to criticize the radiographic interpretation, that a finer appreciation of some of the technical difficulties encountered in the laboratory, might perhaps explain a good deal. I hope to call the attention of the reader to some of the common sources of error in the usual cases examined. The anatomy and technical demonstration of the sinuses will not be entered into, in any great detail, but sufficiently to consider intelligently the points under discussion.

Strange as it may appear to the initiated, I have time and again been requested to ray the accessory sinuses of patients who had already been under treatment by means of suction, or other methods, and been requested to furnish detailed information as to the condition of these sinuses. To expect to demonstrate anything but granulations seems absurd, but the error has been committed time and again.

NECESSITY OF PRELIMINARY EXAMINATION

A thorough physical examination is as important in this as in any other type of disease. It is astonishing sometimes to note the number of extrasinus conditions that simulate true sinus disease. Causes of indefinite facial pain, neuralgias and headaches should be thoroughly analyzed before the attention of the examiner is focused on the accessory sinuses, as a possible source of pathology. Errors of refraction, as well as symptoms of focal infection, warrant investigation. Infected teeth, gum abscesses and unerupted teeth, often from the mere superficial examination, present what appears to be typical sinus pictures. "It is my opinion that the majority of cases of chronic disease of the antrum arise from some necrosis of the jaw and teeth." (1) Intranasal conditions such as deviated septa, enlarged turbinates, etc., which, while they often are the cause of sinus disease, will present a typical sinus picture when no such pathology is present.

RADIOGRAPHY VS. TRANSILLUMINATION

The value of radiographic diagnosis has often been the subject of unjust animadversions as compared with the office routine of transillumination. Pontoppidian gives positive illumination in 144 out of 152 cases, and believes röntgenology to be superfluous (2). We do not believe that this is a universal average, nor do we believe that the consensus of opinion of otolaryngologists would support that view. "Even with the best transillumination outfits in the majority of cases a radiograph will have to be taken in order to determine whether a diseased antral condition is present or not (1)."

References to the anatomy of various skulls indicate, we believe, the dangers of relying solely on this method as a diagnostic means.

A true appreciation of the normal as well as variations within the normal, is absolutely imperative in the consideration of any pathology. The frontal sinuses are often absent, and when present vary in size, shape and depth, as well as in the thickness of the anterior bony wall. The practical importance of this is great. In transilluminating frontal sinuses, particularly, we are treading on dangerous ground. An area which does not illuminate properly will

often be classed as a pathological sinus, whereas there might be an anatomical absence of one. I do not contend that transillumination is utterly valueless but I do believe that too much reliance is placed on this as a diagnostic means. It is of certain value in the antra, but we believe it absolutely worthless as a definite guide in frontal sinus disease. On the other hand, the radiographic error in interpretation is often due to an imperfect appreciation of the various shades of density, which the various pathological sinuses will produce. Let us consider several types of cells as an illustration of this point.

1. The small thick walled sinus of average depth may well give the appearance of the presence of either pus or granulations, whereas no such pathology may be present, or conversely.

2. The large deep thin walled sinus may give a normal appearance and yet contain granulations or pus.

The reasons for this will be apparent. The small sinus will often, but not invariably, have a thick anterior wall with little air containing space, the ray will have greater difficulty in penetrating and the result is a radiograph that might be variously interpreted. In the second case cited, the easy penetration of a large thin walled air containing cavity will often obliterate finer shadows indicative of pathology.

3. In early cases of acute sinusitis, particularly in the small type sinus, the exudate present very often will not add materially to the density of the cells under examination, and with the present limitations of the x ray will not cast an appreciable shadow in the sinus area. This diagnostic error holds for both the x ray and transillumination (3). It is just this finer appreciation of shades and shadows that materially reduces the percentage of error. Röntgenologists will often have a sort of intuitive knowledge of the amount of density to expect from the various types of cells.

4. The fourth source of röntgenological misinterpretation is fortunately rare. We refer to the mistaking of an absent sinus for one that contains granulations or pus. It should be stated in this connection that no matter how much pus there be contained in a frontal sinus, there should remain a limiting cellular border; its absence means the lack of a frontal sinus and can usually be checked on the lateral view of the skull. This fact is invariable, according to the experience of the writer.

ETHMOIDAL SINUSES

In rereading many of the films referred for confirmatory diagnosis we have noted a tendency to ignore in the written reports the presence of ethmoidal cells in the frontal region. These cells are commonly infected and when present give symptoms identical with those of true sinus disease. The failure to note such a condition results in unwarrantable delay and annoyance to the physician and to the patient.

The handicaps usually met with in accessory sinus disease do not as a rule pertain to the ethmoidal sinuses. Here the easy accessibility of the field under scrutiny permits of quick and easy diagnosis. It is to be remembered, however, that those of us living in large cities have always some degree of ethmoidal infection and a word of caution may not be amiss in considering the operability of a given condition. It is to be deplored that there is not a more universal use of the x ray in considering indefinite causes of eye disease. The information that may be obtained in these cases is often of great importance.

SPHENOIDAL SINUSES

The sphenoidal sinuses are more commonly involved than is suspected. Here again technical difficulties complicate the diagnosis. The usual view employed is a lateral view of the skull, which superimposes most of the bony structures of the face over the region of the sinuses and furthermore, gives but at best, a lateral view of the area under investigation, making accurate interpretation difficult. We have adopted the Pfahler technic of demonstrating these cells and have found that it considerably facilitates the diagnosis of sphenoid disease. Briefly this method consists of a two by three film placed in the mouth between intensifying screens. The exposure is then made through the vertex of the skull. The advantage of this method is that it gives a horizontal projection of the ethmoidal cells and a very distinct picture of whatever pathology exists. (4). This method also affords a means of comparing both the right and left sphenoidal sinuses—so difficult to obtain on other views.

MAXILLARY ANTRA

I appreciate the disappointment of the otolaryngologist in failing to obtain pus on puncturing a röntgenologically positive antrum. Possibly a brief exposition of the sources of error may explain the why and wherefore. A common source of error is due to the position in which the exposure is made. The usual position is a posteroanterior view with the tube so placed as to project the petrous portion of the temporal bone into the lower half of the orbit, out of the maxillary area. This as a rule permits of easy and reliable interpretation. However, this is sometimes incorrectly or imperfectly done with the result that a bone shadow of considerable density is thrown over the maxillary area. The writer has in addition to the usual posteroanterior view added the Walters-Waldron position. In this position exposure is made through the vertex of the skull, with the chin of the patient placed on the plate. (5). Radiographs taken in this position are of invaluable aid in checking up any pathology demonstrated by the orthodox posteroanterior view. This is also a view that will check any demonstrated frontal sinus pathology. In this method, the petrous portion of the temporal bone is projected out of the field under examination. Ofttimes, a definite diagnosis may be made by this position where the pathology on the posteroanterior plate was obscure. We have had such striking results with this technic that we heartily recommend it as a routine measure in all cases.

Röntgenologically, it is impossible to differentiate between the presence of either pus or granulations in the antra. Various media have been injected in an attempt to see whether a radiographic difference could be detected but no working formula has as yet been devised. (6). Hence on the radiographic report it is usually stated that pus or granulations may be present and consequently if on puncture no

pus is obtained, the fault is not with the radiographer, since the antra might still contain granulations or a markedly thickened membrane. We have never yet seen a fluid level in the antra; the technic of the exposure calls for the patient to be placed face down; consequently the fluid, if present, will move up and homogeneously overshadow the antra. This is noted in lung work, where the chest will be homogeneously clouded if the patient is placed flat on his chest and the exposure is made. In the upright position, a typical fluid level may be demonstrated in the presence of air in the pleural sac.

It is perfectly possible to conceive a condition where a trochar and cannula introduced into a pus containing antrum may still fail to demonstrate pus since the level of the floor of the antrum is more often below the level of the floor of the nasal cavity. Here the level of the fluid may be below the level of the exploring instrument and no fluid be obtained as a result. Often the viscosity of the fluid is such that it is too thick to flow readily through the needle. Repeated irrigations will often demonstrate pathology not found at the first examination.

CONCLUSION

I have attempted to enumerate briefly the common sources of error in accessory sinus interpretation. The importance of a general clinical and laboratory survey of the case has been emphasized. I believe that the x ray examination should be considered an important correlating source of laboratory aid and, while not infallible will, as a rule, give a correct lead on a case. It is not my contention that transillumination is worthless, but conclusions based on its employment are hazardous and for the protection of the patient as well as the physician, its findings had best be corroborated by the x ray. In any case of accessory sinus disease, the clinical symptoms must a priori be considered and the operative course must be guided solely by its indications.

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Hotel Ansonia.

Chronic Bronchitis of Nasal Origin*

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Chronic bronchitis of nasal origin seems not to have attained to the dignity of being mentioned in our textbooks, at least I cannot recall having noticed it in any one of a half dozen works on general medicine including one published a few months before this article was prepared. As far as I can determine, nothing of much importance along these lines appeared in the literature previous to about 1916, at which time the intensive study of chronic coughs among the soldiers of the warring nations drew the attention of observers to the nasal origin of many bronchial diseases supposedly having a tuberculous foundation. My own interest in this subject dates back from the latter part of the year 1919. This article is based on the assumption that a bronchitis persisting for longer than fifty days may be classified as chronic. It may be stated in passing that at present I do not consider any patient with a cough or bronchial disease as having been thoroughly examined which does not include an examination of the nasopharynx and nasal accessory sinuses. How this is to be done need not be detailed here, as methods of procedure may be found in the various special and many general texts on diagnostic technic; suffice it to say that the difficulties are not insurmountable to an average well trained physician.

The history, symptoms and treatment may be considered along broad lines as it is not considered necessary to go into minute details as this would only be repeating what is already well known.

In general, the history of the class of cases we are considering, shows that in the beginning the syndrome observed in acute coryza with tracheobronchitis is also present here, but with this difference, the onset is not so acute, nor the reaction so marked, symptoms apparently persist for a longer time, vary in intensity from what we might regard as repeated acute flareups to a stage where there is a constant slight annoyance. It is to be noted that at no time from the beginning of the condition do the symptoms ever entirely disappear, rather do they tend to become more and more persistent until a chronic stage is reached wherein the symptoms are well marked and quite definite. Among the symptoms we find always a persistent cough, usually but not invariably accompanied by more or less obstruction to nasal breathing, at times amounting to complete obstruction and manifest mouth breathing; this latter is termed the bronchitis of the corked nose.

Close inquiry will disclose that these patients virtually blow their nose into the pharynx which not only infects the lymphatics of the pharynx but produces a descending infection of the larynx and trachea. What follows is usually the condition for which the patient seeks relief, namely, a laryngitis or bronchitis or both with persistent cough.

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The most frequent sources of infection in my experience have been: Chronic purulent ethmoiditis, adenoids, maxillary sinusitis, chronic purulent sinusitis, and pansinusitis, in the order named. Cases traceable to frontal sinusitis I have not encountered. Three types of cases have been described and will be noted because in a general way they coincide with my observations although few of my cases have been as true to type as here described. The mechanism of the infection is the same in all, there is probably a difference in the organisms involved. I have never worked out this feature, but I am inclined to believe that these are the same as those which cause the original infection in the nose and sinuses.

TYPES OF CASES

A. The infection appears to spread equally through the main branches of the bronchi and to the alveoli. This form may lead to dilatation of the bronchioles, and on auscultation the physical signs of emphysema are manifest. There is no pain, the cough varies, being affected by the atmospheric humidity. When this is relatively high the cough is increased, conversely when the humidity is low and the weather warm, such patients may have surcease from their cough and nasal discharge when this is manifest. The winter months are the worst for these patients for the reasons stated. Among the fairly constant symptoms in these cases is, that the cough is increased on lying down, hence a habit of going to sleep well propped up with pillows. Another striking symptom not only in this but the other types as well, is the hawking, coughing and sometimes profuse expectoration on arising. In this way the nasopharynx is cleared of accumulated secretions which as a rule are thick and tenacious. The secretion from the lungs varies from a relatively thin serous to a thick purulent material. The amount is not constant and changes from day to day.

A rise in temperature is not frequent. I have treated cases in which the temperature ranged from 99° to 101° over a period of two weeks, seemingly being influenced by atmospheric conditions and local treatments to the nose. This is the type of case which has most frequently come to my attention, the most usual coexisting nasal condition being unilateral and bilateral ethmoiditis. Back of this has been a history of influenza or repeated attacks of acute cold. In children adenoids have been the most frequent causal factor.

B. Tracheal or phlegmonous type. Here the pathology in the lung seems limited to the trachea. It is characterized by severe painful paroxysms not unlike asthma, followed by moderate expectoration. With the coughing there is substernal pain. The patients in the few cases of this type which I have observed and treated have never had a rise in temperature. Some have been troubled with moderate dyspnea. The most usual associated disease has been some abnormality in the nasal structures, such as deviation of the nasal septum causing obstruction with hypertrophy of one or more turbinates, generally on the side opposite to the convexity of the septum. There was a history of bronchial symptoms coming on gradually over a considerable period with no remissions.

C. Localized form. In this form the lung involvment occurs in patches in the lobes of the lungs. At times only a small spot, frequently near the apex. This condition is difficult to differentiate from pulmonary tuberculosis, and although all tests and examinations for the latter prove negative there is always room for some doubt. The basis on which one may decide against tuberculosis is the clearing up of the physical signs after a short period of local and general treatment. One such case led me to believe that I was dealing with a fetid bronchitis, until diagnostic puncture of the maxillary sinus brought forth a quantity of foul smelling pus. Subsequent treatment by a dental surgeon cleared up all symptoms. Incidentally the few cases of this type which I have treated have shown maxillary sinus infection.

TREATMENT

It goes without saying that from what has already been stated, every abnormal condition of the nasopharynx and sinuses should receive proper attention and treatment. I have nothing new to offer along these lines, the procedures are mostly surgical and have been tested by time and found successful when performed by competent men.

You are perhaps interested in the general measure which may be adaptable in these cases, and while what I have to say along these lines may not be novel, yet I venture to hope that some of you will find something of value in my suggestions. Though I have had only a limited experience with vaccines, I believe them to be of distinct value as an auxiliary to the local and general measures. Apropos, Mackey (2) in 130 cases found germs in the sputum which seemed of sufficient importance to be incorporated in a vaccine. In about half of the cases the infection was a mixed one. On the whole, these vaccines were so successful that Mackey was forced to the conclusion that the cause of bronchitis, and also some types of asthma, is to be traced to an infected state of some part of the nasal passages. My personal experience has been limited to the autogenous variety. Of drugs, potassium iodide in average dose has been the proverbial sheet anchor. Its influence is most pronounced in ameliorating the lung symptoms, but it seems also to have a beneficial effect on any existing perverted nasal secretion, rendering it more fluid, thus facilitating its discharge and free drainage. Together with the measures directed to the removal of causal factors, potassium iodide hastens and facilitates recovery. I know it is a distinct aid in restoring normal conditions.

Inhalations of benzoin, eucalyptol, menthol, creosote, turpentine and other volatile aromatics generally in combination of two or more of these in vapor form, are of some value, though in my judgment only slightly so. The symptomatic control of the cough is perhaps of the most importance to the patient, and I may add often to the attending physician as well. How futile this proves to be, is well attested by the innumerable preparations put out for this purpose. It must first of all be determined whether or not the cough is productive. If not, codeine in three to six centigram doses is the drug of choice. Sometimes one of the bromides in one to two gram doses will prove effective. These drugs should be used sparingly and for no greater period than necessary to accomplish their purpose. Many

patients can be taught to control their cough by the exercise of will power, using the drug only as required to prevent loss of sleep. A productive cough should not be suppressed under any circumstances, assuming it will not produce untoward symptoms in other respects, rather it should be encouraged as an aid to the expulsion of accumulated secretions. As an aid I have found nothing better than potassium iodide and ipecac in some one of its fluid forms and in the highest doses the patient's age and condition will tolerate. Ammonium chloride appears to enjoy a considerable reputation as an expectorant, but in my hands its value has proved doubtful under any circumstance. It probably has a slightly solvent action on mucous or mucopus with which it comes in contact, but as this contact is limited to the throat at the moment it is swallowed, its use must be quite limited. In cases where there are attacks or paroxysms simulating asthma, I have used lobelia or belladonna in connection with potassium iodide, or bromide or both, the dose here as elsewhere being varied according to circumstances.

Other measures which have appealed to me as being of benefit in restoring normal conditions and building up resistance have been cold sponging of the chest upon arising for the day to stimulate and deepen the respirations; the breathing and body bending exercises as described in the various drill manuals as used in our army; sports such as will take the patient out in the open in proper weather, such sports to be of a nature suitable to the age and general physical condition of the patient. Climatic treatment when required will readily suggest itself, and is outside the scope of this paper.

In conclusion, the care of a goodly number of cases of the nature herein described, over a period of three years, convinces me that my observations are rational and of practical value. Training in the speciality of otolaryngology together with enough general work due to the exigencies of military service, have enabled me to treat cases from both the specialist's and internist's viewpoint.

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Abscesses of the Nasal Septum, Their Etiology and Treatment with Reference to Resulting Deformities*

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I have never seen a case of abscess of the septum that did not result from traumatism, and I believe that this etiology may be accepted in practically all cases. Gummatous, tuberculous and other possible specific infiltrations do not come under our present consideration, we are interested here in those acute abscesses due to the introduction of pyogenic organisms between the layers of the mucoperichondrium of the septum.

It is unnecessary to urge the importance of this subject, for the condition is common and the deformity of the nose and the interference with its function, which almost invariably follows the healing of the abscess, are most disastrous. A blow upon the nose without fracture may result in abscess. The question as to the hematogenous origin of the infection might arise here, but the probability is that the infection gained access to the septal tissues through a rupture of the mucoperichondrium. When fracture occurs there is no question as to its mode of introduction, for all fractures of the nose may be regarded as compound into the nasal cavities.

Abscess of the septum is often slow and insidious in its development; frequently a week will intervene before infection is suspected and the case when seen by the surgeon may present a well developed septal abscess, the mucoperichondrium being dissected up by the burrowing pus over a considerable portion of the septum with much destruction of bone and cartilage support. General turgescence of the nasal mucous membrane may mask the septal condition and make an early diagnosis difficult. Fluctuation in well developed abscess may be elicited by placing the tip of the little finger in one nostril and palpating with a cottontipped applicator on the other side. This sign is of no value in the early stages when the diagnosis is in doubt and when it is most important that the true condition shall be known. A sign which may be considered almost pathognomonic of septal abscess is an abrupt thickening of the septum just behind the columellæ, the septum posterior to this being swollen and inflamed. This point corresponds to the anterior border of the triangular cartilage and is the point of election for making the incision for drainage of the abscess. Emphasis is made of the importance of this sign, for by observing it the diagnosis may often be made before the formation of pus, and when this is done and the proper treatment immediately instituted, the disastrous results to the contour of the nose which invariably follow a well developed septal abscess, may almost surely be avoided.

An early diagnosis is important, too, to insure the safety of the patient, for the infection may gain access to the meninges through the cribriform plate; I recall at least two deaths in my hospital practice that resulted from septal infection being transmitted to the brain in this manner.

Hematoma of the septum may be differentiated

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from abscess by the history of rapid development of the swelling after injury. Following the submucous operation an impending abscess of the septum may be suspected at once if there are symptoms of an acute coryza accompanied by the usual general symptoms of infection, such as chilly sensations, rise in temperature, and malaise. Hematoma following this operation is extremely likely to develop into abscess. Personally I regard hematoma as an early stage of abscess and treat it as such. Experience teaches us that we are fully justified in assuming that the clot is infected.

TREATMENT

Treatment should be begun at the earliest possible moment and should be vigorously prosecuted. I have found the following procedure satisfactory and have abandoned other methods in favor of it: An L shaped incision is made on the left side, the long arm of the L corresponding to the anterior border of the septum and the short arm being extended backwards along the floor of the nose. The incision is made freely into the abscess cavity. I then wash out all of the pus with warm, sterilized salt solution and swab out the entire cavity with sterilized absorbent cotton until it is practically dry. Two applicators are wound with cotton; one is dipped in pure carbolic acid and the other in ninety-five per cent. grain alcohol. The abscess cavity is then swabbed out with carbolic and this is immediately followed by a thorough swabbing with the alcohol. I then introduce one of my gold wire splints into each nasal fossa. This is a distinct advantage over the old method of packing the nose with gauze, for not only are the septal walls kept in contact with each other or with the septal cartilage and bone, but the nasal cavities are kept open for respiration, for cleansing and for drainage. The nasal cavities should be sprayed frequently with glycothymolin and the bowels should be kept freely opened by saline catharsis.

I have controlled some very severe infections by this method of treatment and I have seldom had to repeat the carbolic application. If the case is one of hematoma whether it is due to accidental or operative trauma, the treatment is the same.

The prognosis in abscess of the septum varies according to the length of time that has elapsed since the infection began. The longer this has lasted the more likely is the upper edge of the septum to be dislodged from its position between the lateral cartilages, where it serves the important function of the keystone of the nasal arch, also the more apt is there to be complete destruction of the bony and cartilaginous septum. If the vitality of the septal bone and cartilage is destroyed, no effort should be made to remove the dead tissue, unless it is free in the abscess cavity, for the effort to remove partially destroyed tissue may result in further injury to the framework of the nasal arch.

If the upper edge of the septum, the keystone of the nasal arch, is dislodged or destroyed, the remaining segments will establish the arch on a lower plane, giving rise to the familiar saddleback deformity. The deformity becomes apparent as soon as the abscess has healed and the swelling in the nose has disappeared. Later the distortion of the nose becomes much more marked, due to the cicatricial contraction of the scar tissue in the walls of the old abscess cavity. The deformity is still further accentuated by the skin and tissues over the cheeks which accommodate themselves to the changed shape of the nose, and finally the whole face appears broad, flat and heavy. For some reason not quite plain to me, but probably due to interference with drainage from the sinuses, atrophic rhinitis very frequently develops in these cases shortly after the deformity becomes established.

There is at the present time only one method known for the satisfactory and permanent correction of this type of deformity, and that is by the transplantation of autogenous bone and cartilage grafts. This method of correcting these deformities was developed by me about fifteen years ago, and some of my oldest cases attest the value and permanency of the results.

While the essential principles involving the use of these tissues in correcting this deformity have remained the same, I have made some changes in the technic which have added greatly to its efficiency. The details of this operation have been published elsewhere, suffice it to say that a strip of conjoined bone and cartilage from the rib of the patient is introduced through a slit in the roof of the left nasal cavity in such a manner as to build up and support the nasal bridge. The upper end of the graft is contacted with the frontal bone just above the nasal spine; it establishes bony union at this point in about two months. The lower end of the graft is composed of cartilage and extends into the tip. It has sufficient firmness to support the tip and yet it does not interfere with its resiliency.

Depressed deformities treated by this method remain permanently corrected. The bone and cartilage, when properly transplanted, are not absorbed, as is shown by numerous serial x ray plates of some of my oldest cases.

These depressed deformities of the nose following septal abscess should be corrected by the transplantation of bone and cartilage as soon as the abscess has healed and the infection has been completely eradicated.

Since the absence or impairment of the vitality of the septum and consequently loss of its developmental force, is certain to result in a flattening of the nose later in life, if the injury occurs during childhood, the interesting question arises as to what if anything can be done to prevent the development of this deformity; in other words, is there any substitute for the developmental force of the septum? Of one thing we are absolutely certain and that is that the autogenous bone transplant, properly introduced and in such a manner that it establishes bony union with the frontal bone, is the only hope upon which we may rely. Here cartilage will not do, for this tissue remains indefinitely the exact size, shape and consistency as when introduced.

A close radiographic study of a large number of cases in which bone had been transplanted from two to twelve years, it is distinctly disclosed that the growth of the bone is influenced by the demand that is made upon it. In those instances where the depressed deformity had been great and especially where much scar tissue had been present, the strain upon the transplant, in its effort to maintain the

elevated and normal contour of the nasal bridge, had been very great and it had increased greatly in size at those points where the strain was greatest.

While this phenomenon does not prove that a piece of rib grafted into the nose of a child whose septum as a developmental structure has been destroyed, yet it does show that a bone graft is a living, growing tissue and that with reasonable certainty we may rely upon it to assist in developing the nose, which if let alone would certainly be flat. I have transplanted bone in several instances where the patient's nose had not assumed its adult proportions. These cases are scattered all over the country and I have been unable to follow them up personally, but the corrections were satisfactory at the time and so far as I know the subsequent development of the nose has kept normal pace with its facial environment, certainly I have heard nothing to the contrary. One of these patients I saw five years after the operation; there was no deformity and the nasal development was normal. I am not sure, however, that the developmental power of the septum in this case had been destroyed by the abscess.

In conclusion, I wish to emphasize the importance and desirability of doing this corrective work intranasally; chiefly because infection is less likely to occur, and there remains no disfiguring scar. Long ago I abandoned my original external operation chiefly for these reasons. The external operation, which is easier and diagrammatically very attractive, appeals to the novice in this work who has not yet developed that sense of touch and delicacy of rhinological technic which is required in doing the intranasal operation. It is unnecessary even to refer to the undesirability of obvious scars in this most important cosmetic field; these necessarily follow external operations.

2 West Sixty-ninth Street.

The Waring Suction Tonsillectomy

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To enucleate or not to enucleate; that is the question. But when it is answered in the affirmative, I think another question can be asked. Is it possible for us to perform tonsillectomy in a better, cleaner, easier, more rapid manner than the ordinary technics in use today will permit? This question may be answered in the affirmative also.

Development and widespread acceptance by the profession today of the focal infection theory, have invited a more intensive study of the tonsil, both in health and in disease. No longer is the tonsil exclusively in the domain of the nose and throat specialist. Tonsillectomy is being performed with increasing frequency, not only by the throat specialist and the general surgeon, but also by the general practitioner. In the hands of the trained throat specialist almost any tonsillectomy technic gives excellent results, but for the beginner, the occasional operator, and even the general surgeon, many of these tonsillectomy technics are difficult to acquire, and often times in such hands the end result leaves a good deal to be desired.

The great number of tonsil enucleation technics, and the still greater number of tonsil instruments on the market today, show the need for a simple, safe, clean, rapid and bloodless tonsillectomy.

Tonsillectomy technics in use today may roughly be classified as some form of snare and dissection; or some modification of the ingenious Sluder technic. It is unnecessary to dwell upon the difficulties and dissatisfactions of present day tonsil enucleation methods; they are known to every operator of any experience.

To eliminate the trials and tribulations of the average tonsillectomy, I wish to present a new method of operation—namely, suction tonsillectomy. The principle of suction, applied through a tonsil suction tube of special design, is employed to draw the tonsil out of its bed between the pillars of the throat, and hold it in a semiinverted position in the mouth of the suction tube, until a dull wire snare loop previously threaded over the suction tube, is carried over the base of the tonsil and tightened down until it is enucleated by a virtual shelling out process, cleanly, rapidly and in a practically bloodless manner.

Nearly every well equipped general practitioner of today has in his office some form of compressed air and suction pump; certainly every physician doing tonsil work has such a pump apparatus as well as a tonsil snare. This is practically all the armamentarium required for suction tonsillectomy; only enough suction to grasp the tonsil firmly and hold it snugly in mouth of suction tube is required—from fifteen to twenty-five inches of vacuum—and every modern suction pump will deliver this degree of suction. Likewise any type of tonsil snare may be employed; ratchet type snares, such as the Pierce-Mueller or Eves, afford a more gradual enucleation where desired; but this is not an essential.

Suction tonsillectomy is a one man job, applicable equally well to office or hospital. This is of importance to the small town physician, who often has a considerable number of cases where tonsillectomy is urgently indicated; but who heretofore has been sadly handicapped, if not prevented from doing his own tonsil work, by lack of hospital facilities, assistant and nurses. I do not advocate tonsillectomy as a minor office procedure, to be performed recklessly by every physician, whatever his training and experience. It should be treated as more of a major operation and best performed in hospital or well equipped clinic. Inasmuch as tonsil enucleation is performed by the beginner as well as by the occasional operator in general practice, however, it is a step forward if we can give them a technic which is simple, safe, rapid

and capable of uniformly good results in such hands —a technic which will enable even the expert to do his tonsil work in a better, more rapid manner.

This suction tonsillectomy will do. It renders unnecessary the elaborate instrumental outlay usually seen at operation; and is applicable equally well to both local and general anesthesia. In fact, its superiority is marked over the ordinary methods.

Where local anesthesia is employed, the tonsillar field may be anesthetized by whatever technic the operator is accustomed to; owing to its rapidity, patients do not have time to become frightened; in fact the entire technic is so simple it may be demonstrated to them in advance, and their possible fears dissipated. Likewise a formidable array of tonsil instruments is not spread before the eyes of the patient; and the absence of bleeding, with its resultant hemostatic efforts, is decidedly reassuring to the patient. Where indicated, tonsillectomy may be performed by the suction method under local anesthesia in the comparatively aged, with surgical shock practically absent.

Under general anesthesia an assistant to administer the anesthetic is the only assistance required; owing to its rapidity of action, anesthesia need be only comparatively light and brief. No time under anesthesia is lost in hemostatic efforts. The operation is particularly valuable in large clinics, where the time and energy of the operator must be conserved to the utmost; patients can be operated upon rapidly and cleanly as fast as nurses or assistants can prepare them under local or general anesthesia. Where general anesthesia is employed, the field of operation may be kept clear of mucus and saliva by the same suction tube as used in operation, a small vacuum bottle of about one half pint capacity being incorporated in the rubber tubing suction circuit between suction tube and pump proper, to serve as a reservoir.

No preliminary dissection is required. High visibility is one of the strongest features of suction tonsillectomy; every step in operation is under direct inspection of the operator; the clear glass of suction tube and the clean, bloodless field enables the operator to see exactly what he is doing all the time. There is no blind groping, or hasty efforts to complete dissection and enucleation in a blood filled pharynx. No injury to the pillars, uvula or throat muscles follows the suction shelling out tonsillectomy. Consequently the fossæ are left clean, throat structures uninjured, and complaint of postoperative sore throat reduced to a minimum. The majority of these patients eat their regular meals the day following operation.

Suction tonsillectomy should almost, if not completely, eliminate the all too frequent pulmonary abscess after tonsillectomy; if, as seems the consensus of opinion today, this complication is due to or resultant from aspiration into the air passages of gross infective masses of tonsillar exudate or pus. With the first application of the suction cup to tonsils, they are vacuum cleaned of sometimes astonishing amounts of pus or foul smelling exudate, often completely concealed and unsuspected deep in the tonsillar crypts. This is so completely removed from the tonsils and from the operative field as a whole, that it is my firm belief that this vacuum cleaner suction cleansing of the tonsils should be used as a preliminary step in technic in every tonsil enucleation.

To eliminate the only technical difficulty encountered in development of suction tonsillectomy and render the technic not only simplicity itself, but one hundred per cent. perfect on all types and sizes of tonsils, a tonsil suction tube of special design was perfected, which I have named the Waring tonsil suction tube. These tubes of clear glass, with a rubber tubular handle for ease of manipulation, have a straight shaft of about eight inches in length, terminating in a bulbous head set at about right angles to shaft, with a smooth sloping shoulder falling in sharply to a full oval aperture perpendicular in its longest diameter. The suction tube is connected to suction pump by a flexible rubber tubing of about four feet length and about one quarter inch diameter, fairly stiff in body so as not to collapse when suction is on; the end of rubber tubing is simply slipped on and off shaft of suction tube to make or to break suction. There is nothing complicated, nothing to get out of order. The tubes are easy to clean and to sterilize. With a little practice the operator quickly selects a tube of sufficient mouth size to include the given tonsil to be enucleated.

Fig. 1—The Waring suction tonsillectomy. The right tonsil is engaged in mouth of suction tube, connected by flexible rubber tubing A to suction pump. Snare loop has been carried down over base of tonsil in readiness to enucleate.

THE OPERATION.

The technic is the same under local and under general anesthesia. A Waring tonsil suction tube of size suitable for the given case is selected from the set, and connected up to suction pump by the flexible rubber tubing above described. The loop of a tonsil snare wire is now threaded over the bulbous head of suction tube, and allowed to hang freely suspended from shaft of suction tube, out of the way until required. A fairly heavy snare wire, about a No. 8, is best, as the dull wire pinches rather than cuts its way through the tissues joining tonsil to throat structures proper, thus giving more hemostatic effect. Any type of tonsil snare may be employed. Under direct inspection the bulbous mouth of suction tube is now carried into mouth, and its aperture placed between the pillars and over the tonsil to be enucleated; the clear glass and clean field enables the operator to see exactly the situation at every stage. Suction is now turned on, when it will be seen that the tonsil is drawn completely out of its bed and held in mouth of suction tube in a semiinverted position. If for any reason, suction grasp of tonsil may be instantly released by sliding off rubber tubing from suction tube shaft, and just as easily regrasped by suction. There is no laceration of tonsil, or pulling out effect, as so often happens with the best of tonsil forceps, tonsil screws, etc. As the tonsil is drawn out of its bed by suction, the pillars are rather pushed aside, or let back out of the way of injury.

Next the tonsil snare is taken up in the unoccupied hand; for the right tonsil the suction tube is applied and steadied with the right hand, and the snare held in the left. For the left tonsil, the left hand holds the suction tube and the right hand the snare. There is no difficult instrumental manipulation to acquire. Nothing to unlearn. Success of the operation does not depend on strong arm muscular exertion. There is no type of tonsil the operator cannot get easily and cleanly by suction tonsillectomy. This cannot be said of many of the older operations.

On the right tonsil, with the suction tube steadied in the right hand, the snare loop is now carried down over bulbous head of suction tube on to base of tonsil to be enucleated; this step is rendered practically automatic by the smooth, sharply insloping shoulders of the Waring suction tube; the snare loop is now tightened down over base of tonsil and the tonsil enucleated rapidly; or if desired for greater temostatic effect, slowly enucleated as is possible with ratchet type tonsil snares such as the Pierce-Mueller, Eves, and others.

It will be found the tonsil is practically shelled out cleanly with its capsule in a completely inverted position, the dull wire of snare loop completing the inversion produced by the suction tube. Where the ordinary snare is employed, the right hand holds the suction tube throughout, but where a ratchet type snare is employed, the suction tube is released as soon as the snare loop is tightly engaged around base of tonsil, and both hands then employed to steady and complete enucleation with the snare. It will be found the fossæ are left clean, other throat structures uninjured, and the operation practically bloodless in every case; except, of course, patients of hemophiliac tendencies, which should be determined in advance if possible by blood coagulation time tests.

The left tonsil is enucleated in same manner as the right, with exception as stated, that the left hand is employed to hold snare, while right hand steadies suction tube.

SUMMARY

Briefly summarized, the advantages of suction tonsillectomy over the old methods are as follows:

It is so simple that even the beginner and occasional operator can do good, clean, rapid, practically bloodless tonsil work from the start.

Its rapidity is remarkable; this makes it easier for both the operator and the patient.

It is essentially a one man job, and does not require the train of assistants, and extensive instrumental armamentarium usually met with in tonsil work.

High visibility is a strong feature; the field of operation is under direct inspection at every stage; and there is none of the awkward and difficult intraoral manipulation often required in the various Sluder technics.

It is equally applicable to local and to general anesthesia operations; and there is no type of tonsil, the operator cannot get easily and cleanly. Its superiority is quickly demonstrated on the small, deeply submerged and badly adherent tonsils, so difficult of satisfactory attack by the ordinary operative methods.

Because of its clean type, lack of bleeding and injury to contiguous throat structures, a minimum of postoperative sore throat is complained of; and convalescence only about half as long as after the ordinary tonsillectomy technics.

Postoperative lung abscess is practically unknown after suction tonsillectomy—no cases being reported anywhere to date; and in general the end results after suction tonsillectomy will be found more uniformly satisfactory both to operator and to patient.

109 East Main Street.

Endobronchial Treatment of Bronchopulmonary Affections

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Endobronchial therapy is rapidly taking its place in the field of modern medicine. The use of the bronchoscope is no longer limited to foreign body removal, but as an adjunct in the treatment of infections of the lower respiratory tract it stands out preeminently.

It is logical that the best way in which to combat disease is to get directly at the part involved and attempt to stamp out the infection or prevent further activity. It is in an attempt to accomplish these ends, when dealing with tracheobronchial infections, that the use of the bronchoscope is essential because there is no other means in the treatment of the affections of the lower respiratory tract that an exact local application can be obtained. Bronochoscopy has enabled us to observe accurately the pathological changes resulting from diseased conditions of the lower respiratory tract and lungs, and to cope with these changes by therapeutic applications of various medicinal substances directly to the involved areas.

The types of cases in which endobronchial therapy is applicable are many. It has proved its efficiency in the treatment of lung abscess, bronchiectasis and bronchial asthma. However, in my opinion, there is still a fertile field as yet undeveloped where endobronchial therapy may be used with gratifying results. In this field comes the treatment of chronic bronchitis and pulmonary tuberculosis. By the use of intratracheal injections combined with direct applications under the guidance of the bronchoscope, we have the therapeutic triad with which to combat the invading armies of infection. We have the most effectual weapons of defense and attack of the present day.

F. Guyot (1), experimenting on animals, has

proved that after intratracheal injections the liquid penetrates the lung from top to bottom in six hours, the epithelial cells multiplying, many showing the presence of the oil that had been injected. He further claims to have cured encysted pleurisy with two months' treatment.

Hamant and Julien (2) have successfully treated tuberculosis of the larynx and lungs by intratracheal injections.

Ginsez (3) has obtained gratifying results in the treatment of gangrene of the lung by intrabronchial injections. From the foregoing we note how valuable is intratracheal and bronchial therapy and by the combined use of direct applications or intratracheal injections under the guidance of the bronchoscope, we are able, in many cases, to stamp out infection.

The use of the bronchoscope is akin to the cystoscope, which is so successfully used in the treatment of bladder and kidney infections, and in many cases the results are equally gratifying.

The technic required is of importance. Local anesthesia, using a solution of ten per cent. cocaine, applied directly to the epiglottis, vocal cords, and passing a swab well down into the trachea, will facilitate the passage of the instrument and will render the patient in a condition whereby the applications or injections may be readily made. Through the loss of sensibility of the mucosa the cough is suppressed, enabling the patient to retain the medication for a long period. The size of the instrument used is of importance. The smallest instrument possible is of advantage. In adults I prefer Jackson's seven millimetre bronchoscope.

Having carried out these preliminaries, the bronchoscope may be passed with ease, and direct applications or injections made without further trouble. A variety of drugs have been used. However, in the application of any substance, one should be governed by the pathological findings encountered upon direct examination. If the mucosa is inflamed, a ten per cent. solution of argyrol or a weak solution of silver nitrate is preferred. For the anemic conditions, so frequently observed in tuberculosis and chronic bronchitis, silver nitrate in various strengths up to ten per cent., and glycerine tannate ten per cent., have been found to yield results.

The bronchoscopic picture encountered in the examination of cases of chronic bronchitis and tuberculosis often reveals changes in the mucous membrane of the trachea and bronchi. The mucosa is, as a rule, of a grayish color, frequently showing areas of fibrosis. The lumen of the smaller bronchi is at times completely occluded, as the result of edema. There is often a profuse secretion, viscid in character, and at times purulent. This is retained, due to the loss of muscular tone. It is by the stimulation of the mucosa, causing a shrinkage of the lumen and stimulating the activity of the flaccid muscles that we assist nature to expel the retained secretions and allow the lung to be properly aerated.

I have used the bronchoscope with good results in many cases of tracheobronchitis, following the inhalations of the various gases that were used in the world war, and in these cases, the appearance of the mucous membrane presents a different picture to what we find in the bronchitis following influenza and pneumonia, or accompanying pulmonary tuberculosis. In these gas bronchitis cases the mucous membrane is highly injected. It is of a beefy red appearance. In this type of case solutions of argyrol and liquid petrolatum, biweekly applications or injections, yield good results. My colleagues have frequently asked if I do not fear traumatism and discomfort experienced by the patient in the passage of the bronchoscope. The traumatism should be nil if the operator is familiar with the technic of bronchoscopy. The slight amount of discomfort experienced by the patient is largely overcome by the use of local anesthesia, and lastly, the amount of discomfort experienced by the patient in no way compares to that experienced by the passage of the cystoscope, which is universally used by the genitourinary specialist in the treatment of bladder and kidney infections.

Before attempting a bronchoscopic treatment it is of utmost importance that the psychological element of the patient be considered. He should be brought face to face with his true condition, explaining just what is expected of him and the results that are to be obtained. Once gaining his cooperation the operator is enabled to carry out the treatment successfully. When his confidence and cooperation are gained the technic becomes very simple.

The first time the instrument is passed, many will complain of a little discomfort; the second time, a little less, and after the third they will often come to you and ask you to pass the bronchoscope because they have experienced such marked relief following its use.

Although the bronchoscope has been used in the control of tracheal and bronchial hemorrhage, it is the author's opinion that it should not be used in the ordinary cases of tuberculosis where hemoptysis or pulmonary hemorrhage is present. This is certainly a contraindication to the use of the bronchoscope, and its injudicious use in these cases may yield disastrous results.

CONCLUSION

The bronchoscope may be used with gratifying results, not only for the removal of foreign bodies from the air passages, but in the treatment of diseases of the lower respiratory tract and lungs, including pulmonary tuberculosis and chronic bronchitis. By its use we are able to accurately make direct applications or injections, and in many instances head off infection.

By stimulation of the flaccid musculature we help nature to throw off the secretions, and thus allow the lung to perform its physiological functions.

The traumatism and discomfort are very slight and should not stand in the way of its use when indicated. Thorough understanding of the relief to be gained and the cooperation on the part of the patient are the two essentials.

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The Treatment of Gastroenteroptosis and the Futility of Surgical Intervention*

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I propose to discuss the treatment of gastroenteroptosis and the futility of surgical intervention. Far be it from me to belittle the achievements of modern surgery. It is a great art, and it has attained to power in the realm of lifesaving such as has perhaps been reached by no other department of medical activity. It is decisive in practice, beneficent in results, and, allied with asepsis, the greatest boon that has come to mankind. As its technic becomes more certain, its service for good will become incalculable. But because it is so fascinating and so wonderful in effect, the surgeon is frequently misled into urging surgical intervention and the patient into blindly trusting it. It is the internist to whom the patient, weak from his operation, comes in search of final relief. It is the internist who appreciates the fact that many an apparently successful operation entails serious disabilities which diminish the patient's efficiency, and, in many cases, jeopardize his health to such an extent that he never can resume his place as a man of service to his community. And often it is the internist's conviction that conservative methods, slow but sure, would have served more reliably than operative intervention.

The fact is that many surgeons are too quick to appeal to the scalpel; in other words, they are too ready to follow up a hasty diagnosis with a hasty operation. A röntgen ray examination with the bismuth mixture may show a displaced stomach, a prolapsed transverse colon, or ptosis of the hepatic or splenic flexure; but such conditions do not imply that surgery is necessary. So long as gastrointestinal motility is not interfered with, there is no absolute indication for surgical intervention. A stomach can be displaced anywhere from its normal position down to the symphysis pubis without interfering with motility. The fluoroscope shows that such a displaced stomach can properly empty itself into the duodenum. There is no disturbance of motility even when parts of the intestine are dislocated. When the röntgenogram shows that a gastroenteroptosis exists, a hasty operation does more harm than good. The surgeon may believe himself driven to resort to operation lest a delay should prove fatal; but a premature intervention may be as calamitous as a tardy one. What busy surgeon follows up these cases and knows just what becomes of them, other than that they left him after the successful operation? What does he know as to the disabilities the patient has had to accept as the price of his recovery, disabilities which may have reduced his earning capacity and forced him to change the whole trend of his life? There are insidious dangers which follow in the wake of speculative operations. Without doubt many operations are a testimony to the enthusiasm of operators; but enthusiasm is not without its dangers. We hear a great deal about the success of operative intervention; but to be perfectly fair the failures also should be recognized.

One of the operations to which gastroenteroptotic patients are frequently and unnecessarily subjected is gastroenterostomy. To be sure, a gastroenterostomy, when indicated, brings results of the most wonderful kind, especially in cases of obstruction of the pylorus. But no operation has been more abused and thus become the cause of more harm. Its use can never be justified as a cure for simple gastroenteroptosis with accompanying neurosis. We also find surgeons anchoring a displaced kidney, attaching the colon to the abdominal wall, suspending the stomach in a hammock made of the great omentum, plicating the gastrohepatic and gastrophrenic ligaments, overlapping the recti muscles, suturing the gastrocolic omentum to the anterior abdominal wall, and resorting to other socalled original expedients for the cure of gastroenteroptosis. The unreasonableness of these operations is clear when we recall that in over ninety per cent. of cases of gastroenteroptosis the position of the abdominal viscera is in normal conformation to the physical status of the body. Patients suffering from such a characteristic bodily form do not respond to surgical intervention. The

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condition is one of general relaxation, which is not helped by a local operation or the fixing of any part of the abdominal viscera. These patients become neurasthenics and suffer from nervous dyspepsia associated with gastric and intestinal atony. Even if we suture the kidney, stomach, or colon, we do not in the slightest degree improve the neurosis. The anatomical dislocation of the organs is of minor importance in contrast with the pathological condition of the nerves involved in the digestive system. It is to be hoped that with a better understanding of the pathological anatomy of gastroenteroptosis the *furor operativus* will be broken and yield to internal medicine.

By mere inspection of a case we are able to base upon our observations a reasonable suspicion of gastroenteroptosis. The elongated, narrow, flat thorax, long neck, prominent scapulæ, depressed epigastrium, and protuberance of the hypogastrium upon standing are quite characteristic. In making a diagnosis of gastroenteroptosis, the finding of a nephroptosis assists quite materially. A palpable kidney is pathognomonic of gastroenteroptosis (1). We know that a dropped kidney is usually an incident to general ptosis, and that symptoms referable to the kidney are mainly due to intestinal displacement. The starting point of a dropped right kidney is a sagging in the flexure of the ascending colon. This is followed by a ptosis of the transverse colon, which brings about traction on the pylorus, and this in turn causes a displacement of the stomach. Ptosis of the hepatic flexure of the colon causes a tugging on the peritoneum, inducing a downward and inward displacement of the right kidney. For this reason a palpable right kidney is an indication of a dislocation of the stomach or of part of the intestine. A movable kidney is not a pathological condition, for every normal kidney, on account of its relation to the diaphragm, moves during respiration. It is pathological only when it is palpable. Why induce a pathological condition by surgically fixing a kidney that is physiologically movable? (2). It is not enough that the patient survives the operation; he should, if possible, emerge from it unharmed. Many patients are permanently disabled by adhesions and other complications following such an operative procedure. The rest in bed after surgery allows the abdominal viscera to fall back to their normal position. This relaxes the mesenteries and ligaments, relieving the tugging on the nerves. The temporary improvement makes it appear that the case is proceeding to recovery. But further observation of the case often shows that this is a mere illusion; some substantial agency of relief is required. This, I believe, in common with many surgeons and physicians, can be brought about by a properly fitted bandage. Surgeons, in fact, often advise the use of a bandage after the operation, during the patient's convalescence, but they credit the operation rather than the bandage with the improvement that ensues.

The conservative method of treatment of gastroenteroptosis is coming into favor because of its evident and many sided merits. It comprises dietetic, physical and medicinal treatment, combined with the accurate fitting of an abdominal bandage. Of the former I need not speak at great length, for it is well known. But as to the bandage I may say that I devised a form of its construction in 1897 (3), and have employed it ever since with almost uniform success in a variety of cases. I have thus far personally fitted 2,722 patients. All of these bandages are made by the same manufacturer.

Before deciding upon the necessity of a bandage, I have found Glénard's "belt sign" (*l' preuve de la sangle*) of great value. Standing behind and passing his arms on either side of the patient, the physician places both his hands on the lower abdominal wall and raises the entire abdominal mass above the pubes. Then, abruptly removing his hands, he allows the abdominal mass to fall. Should the patient feel distress or discomfort by this release of the temporary support, the indication is clear that an abdominal bandage is needed. If, however, the patient feels no relief when the abdomen is thus lifted, the bandage will have no good results. My bandage raises the intestine by pressure upon the hypogastrium from below upward. This pressure relieves the tension of the ligaments and mesenteries of the abdominal organs. If properly adjusted, the bandage not only affords support to the abdomen, but also allows free and easy respiration by relieving the dragging on the diaphragm. It enables the viscera to function normally, rehabilitating the organism. As soon as the abdominal organs have regained their normal function, the body begins to respond to therapeutic treatment (4).

It is well known that the veins are more easily compressed than the arteries. In gastroenteroptosis the arteries continue to carry the same quantity of blood as before to the organs, but the veins, under more or less external pressure, are unable to carry the blood back. As a result we have a chronic passive congestion, leading to the usual neurasthenic symptoms found in this condition.

The bandage rapidly corrects this interference with the circulation. In the treatment of over 2,700 cases of gastroenteroptosis, each patient having been directly fitted with my bandage, I have been led to believe that 95 per cent. of patients suffering from this condition can be relieved without operative measures. Contrary to the report of former clinicians, the röntgen ray with the bismuth mixture shows that the stomach and intestine can be raised and eventually retained in place by the use of a properly fitted bandage.

The wearing of readymade abdominal bandages which aim to support the abdominal viscera usually ends in failure. The bandagemaker, to whom the order for the bandage is sent, is usually left without any definite instructions as to the results desired. He does not care whether the stomach is below the umbilicus or the colon is in the pelvis; a bandage is demanded of him and a bandage is furnished. At the end of a few days the patient refuses to wear the apparatus on account of discomfort, or severe pain may develop from pressure at some weak point. To attain a satisfactory result each patient should be fitted by the attending physician with a bandage adjusted to his specific condition, with instructions as to its proper application. The wearing of such a bandage not only raises the position of the abdominal organs, but relieves the strain and tugging on the nerves in the mesenteries. In this way the normal function of the organs is reestablished. In other

words, we restore the physiology of the abdominal viscera to normal and obtain, in cases of gastroenteroptosis, a bodily condition which readily responds to dietetic, physical and medicinal treatment.

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74 Adams Avenue West.

My Latest Conclusions Concerning Gastric Ulcer*

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If Rosenow can pick up a guineapig and give it a pyloric ulcer by inoculating the animal with streptococcus viridans, the "mystery history" of gastric ulcer would seem to disappear. We are left, then, with the simple duty of analyzing the various features of the subject according to methods of ordinary philosophy.

Terminal arteries, elective affinity for toxins, sensitization. These appear to be the three most salient features of the gastric ulcer question. Embryologists divide the alimentary tract into the foregut and the hindgut. For the sake of convenience they sometimes arbitrarily make a third division called the midgut. This includes stomach, duodenum and jejunum.

For our purposes in this paper we are to note the anatomical peculiarity of richness of the midgut in terminal arteries. Arteries of this sort are particularly abundant in the region of the pylorus and duodenum where ulcers are also most abundant. Association of idea must remain closely in touch with association of this latter fact.

Rosenow has shown us that certain areas of the alimentary tract have an elective affinity for toxins of many sorts. These areas appear to have elective affinity for antigens of widely different kinds and the presence of antigens in excess in a given area calls out a corresponding increase of antibodies.

Authors have sometimes called attention to the fact that patients with ulcer of the midgut area appear to have an idiosyncrasy. Idiosyncrasy is only common parlance for sensitization, the latter word being used in its pathological meaning rather than in a physiological meaning which relates to organic processes in general.

In recent years we have become familiar with this subject of sensitization, but more should have been said by gastroenterologists on the subject in its special relation to ulcers of the midgut area. Patients presenting these ulcers appear to have a sensitized endoderm which corresponds to an ectoderm with its demonstrations of urticaria or of chronic eczema. Acute gastric ulcer then is to be placed in the category with urticaria; chronic ulcer with a patch of chronic eczema of the leg, for purposes of comparison. The restricted area of ulcer demonstration relates to terminal arteries. There are no terminal arteries to restrict the area of skin outbreaks.

In addition to our three salient points in connection with midgut ulcer we may perhaps place a fourth feature relating to endocrine dysfunction and wrong hormone production. My reason for making note of this fourth point is that so many of our patients with midgut ulcer present stigmata of arrested development. For example, we shall often find the high arched palate, narrow costal angle, gunstock scapula, coccygeal dimple, relaxed peritoneal supports and other stigmata of racial decline in midgut ulcer patients.

Let us now go back to our first point, the anatomical one, relating to terminal arteries. Twenty years ago I presented photomicrographs illustrating the effect of toxins in a terminal artery area. The toxins may produce either endarteritis of the terminal artery with exudative closure of its lumen or they may produce spasm of its walls, the end result in either case being a small area deprived of normal blood supply. This area corresponds to an area that had been supplied with blood by any given terminal artery. In the midgut district a small anemic area of this sort loses its enzymic protection against digestive and microbic processes to a greater or lesser degree. This means that it may be attacked on the one side by digestive ferments or microbes, and on the other side by excessive production of antibodies which are capable of producing a lysis of structures in the involved area. (Turck.)

Some of us would speak of this process in mechanistic terms but perhaps we may better speak of it in chemical terms as being more comprehensive because chemistry has been described as "everything that is going on."

In regard to our second salient point, elective affinity for different toxins, the ones which appear in the midgut area may vary in character in such a way as to cause quite different types of ulcer demonstration. For example, toxalbumin from a burn of the skin or cytose from the developing ovum in a pregnant woman may cause ulcer to appear in the duodenal area. Duodenal ulcer in these patients is perhaps overlooked more often than it should be in view of the physician's attention being attracted toward more obvious features of the case. On the other hand, antigens from foci of infection in tonsils, teeth or colon may cause ulcer formation much

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more frequently in the affinity area of the pylorus.

Various peripheral irritations may have a precipitating effect rather than a causative effect in the production of ulcer in the midgut area. For example, correction of nasal hypertrophies or of eye muscle imbalance, the removal of hemorrhoids or of a fibroid appendix, or even the fixation of a loose kidney may interrupt the cycles or quite prevent the development of gastric ulcer in otherwise susceptible patients. Peripheral irritations are perhaps to be best looked upon as precipitating factors rather than as causative factors in midgut ulcer production.

The prompt disappearance of midgut ulcer in some patients after removal of peripheral irritations seemingly quite far removed, for example, correction of eyestrain or the closure of a hernia, would indicate the original presence of a disturbed sympathetic system which was causing wrong hormone production in the midgut area. This wrong hormone production leading to hyperacidity and to functional derangement of the intimate ganglia of stomach or bowel wall might allow more fundamental factors in the production of midgut ulcer to develop. That is what I mean by expressing the belief that peripheral irritations act as adjuvant or precipitating factors rather than as causative factors in these cases.

Concerning our third salient point, sensitization, certain individuals who have been sensitized in some way may subsequently become immune and recover from the tendency to develop midgut ulcers. Up to the present time this seems to have occurred along lines of a natural immunizing process, although the gastroenterologists are inclined to give credit to their diet lists instead. So far as I am aware direct efforts at securing immunization against a particular antigen are not as yet a feature of the everyday practice of physicians in these ulcer cases.

TREATMENT

What is to be our line of treatment? Midgut ulcers belong particularly to the internist rather than to the surgeon. The surgeon is a therapeutic resource to be made use of by the internist under certain conditions. I have sometimes operated upon two or three gastric or duodenal ulcer patients at a single clinic for the purpose of demonstrating different methods of operative technic. My latest conclusions are that most of these patients should not have been operated upon at all. On the other hand, internists who depend upon their diet lists and routine methods of treatment without going at the fundamental factors in a case are not up to date. Internists who fail to hunt up foci of infection or to make food sensitization tests or to have peripheral irritation factors removed are not to be trusted with the responsibility of the care of these patients.

Periodicity of the appearance of acute symptoms in many cases of midgut ulcer belongs to the well known law of action and reaction. Cyclic appearance of pyloric ulcer in any given case belongs in category with the cyclic rise of temperature in cases of plasmodium infection. The greater length of time in the ulcer cycle does not take it out of the physiological rôle played by antigens and antibodies.

Many of these ulcer patients who have been sent to me for surgical operation have not been operated upon. The only thing that I have cut off has been the diet list. The patients are frequently half starved and their attention has been so concentrated upon fanciful methods of medical treatment that introspection has made hypochondriacs of people who should have had ruddy cheeks and a hopeful and courageous outlook upon the affairs of life.

The search for an antigen which is causing midgut ulcer includes the idea of very high class management and the antigen is sometimes found suddenly as a surprise. In one case in which tests for various protein poisons had been made without result, the patient unexpectedly showed violent reaction to tests for wheat and was easily cured when wheat products were removed from the diet. The surprise in this endoderm case corresponded to that of a case in which chronic psoriasis involving the ectoderm was promptly cured after the patient had responded to tests for yeast sensitization.

In former years I entered with zeal upon operative treatment in midgut ulcer cases and in fact furnished one encyclopedia with its article upon the subject. Later when the American College of Surgeons introduced methods of standardization into the hospitals and the followup system was instituted we began to learn that patients who had been operated upon for ulcer and whom we supposed to have been cured had not always returned to their original advisers. They had gone elsewhere upon recurrence of symptoms.

We may ask ourselves the question why it is that any midgut ulcer patients remain permanently well after operation which makes no change in the original conditions which had led to ulcer formation. A ready answer might be that a sufficient number of antibodies remain to protect the patient against recurrence of ulcer in very much the same way as they remain to protect a patient against a second attack of typhoid fever.

Furthermore, some of the patients who refused to follow my advice to have surgical work done became quite well under the care of competent internists. These doctors convinced me with great difficulty because I was so "set in my ways," but the change in point of view has finally come about as a result of their teaching by means of object lessons.

At the present time my own midgut operative work is confined principally to ulcer cases with old adhesions which inhibit peristalsis, to old indurated ulcers which have failed to make good enough response to medical treatment and to cases with acute perforation. These form a comparatively small proportion of cases on the whole.

Concerning the first group, cases with old adhesions causing interference with peristalsis, I greatly disapprove of the attitude of internists who keep these patients going half well and half ill for years. The "cobwebs in the attic of the abdomen" should be removed when we secure good radiographic evidence of their injurious effect in any given case. No comment is required upon the group of cases in which old indurated ulcer fails to make satisfactory response to medical treatment. In the group of cases with acute perforation and penetration of protective walls I have taught heresy for many years. In this field of work the principles of the fourth or physiological era of surgery come into full play as opposed to the principles of the third or pathological era of surgery.

In the third or pathological era we were trained to do ideal work in technical operative procedure and to remove from the operative field all sources of infection. In perforating ulcer cases this meant thorough closing of the field in which escaped gastric contents appeared and it included the idea of closure of the perforation with perhaps a gastroenterostomy in addition. The fourth or physiological era includes quite a different idea. We depend upon the protective forces of the individual rather than upon our beautiful surgical art.

What are the conditions present in a case of acute perforation? There is perhaps shock or collapse. Escaped contents of the stomach are free in the peritoneal cavity and are being distributed by peristaltic movement. The patient is in no condition for an ideal operation. Attempts at cleansing the peritoneal cavity would result in causing more shock to the great central sympathetic ganglia without the remotest possibility of the surgeon being able to remove all of the escaped material. My choice of procedure has been that of the two or three minute operation followed immediately by the Alonzo Clark opium treatment. The patient is given part of a glass of methylene blue solution in advance of operation and a full dose of morphine. The methylene blue will escape through the perforation and give us its location when the abdomen is open. The dose of morphine lessens the destructive impulses which are being shot into the centres of consciousness of the patient and it halts peristalsis which is spreading escaped material. The abdomen is quickly opened and a drainage tube inserted down to a point near the perforation but not reaching quite to it. Some loops of iodoform gauze are placed in such a way as to allow freedom of escape of stomach material into our external dressings. A few sutures may be taken quickly in order to lessen the size of the surgical incision but these must not interfere with free drainage. The Alonzo Clark opium treatment is then instituted for a few hours. The patient's respiration rate may be carried down to ten or twelve to the minute by means of tincture of opium or opium powder dropped upon the tongue. The dictum of Dr. Clark was "Do not measure the opium, measure the respiration rate." The respiration rate in itself has no meaning excepting that it parallels the peristalsis rate. When the respiration rate is twelve a minute peristalsis has practically ceased and nature, rushing antibodies to the region, becomes actively engaged in walling off the area soiled by escaped gastric contents. Weeks or months later when the patient is in good physical condition an ideal operation may be done in the case provided that it becomes necessary. As a matter of fact, spontaneous closure of fistulæ will usually occur if they are not kept open by the use of antiseptics, the most injurious of which being, perhaps, peroxide of hydrogen.

Surgeons in general are not quite ready to accept the principles of the fourth era of surgery in these cases. They have spent too much time and thought conscientiously in developing the principles of the third era of surgery. At surgical society meetings my position is often attacked strongly by excellent surgeons who advocate third era treatment in these cases.

Sometimes I learn of cases of acute perforation in which an ideal operation consuming less than an hour of time is followed by the death of the patient shortly after his removal from the table. It would be unwise to say that fourth era treatment would have saved the life of any given one of these patients but a three minute operation is the treatment that would have been employed in place of third era method by some surgeons in some of these cases.

On the whole, my latest conclusions are that both internists and surgeons will become sufficiently modern in their treatment of midgut ulcer cases when the principles of the fourth or physiological era in both medicine and surgery have become well established. Meantime, I would ask the members of our society to keep in mind the three salient points which seem to me to be most important: terminal arteries, elective affinity for toxins, and sensitization. Furthermore, I would ask you all to remember the saying that it takes nine specialists to make a doctor. There are few positions in the practice of medicine in which the saying is more true than it is in connection with the subject under discussion.

114 East Fifty-fourth Street.

The Present Status of Knowledge of the Transition of Gastric and Duodenal Ulcer Into Cancer*

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Does simple benign ulcer of the stomach become malignant with a frequency which should give such a complication a prominent place in prognosis? Writers as early as Cruveilheir, and Zenker suggested such a development as originating in ulcer of the stomach. (I have included ulcer of the duodenum in this discussion, on account of its close relation to ulcer of the stomach.)

An important point to consider before we are able to interpret clinical or pathological data is what evidence must we have of such a change. MacCarthy states that, "No one should state positively that cancer arises from chronic gastric ulcer until one experimentally produces chronic gastric ulcer and produces cancer in the ulcer, and then shows that all the conditions of the experiment are comparable to the condition which arises in human beings." He classifies ulcer of the stomach as: 1. Simple acute

*Read before the 1923 meeting of the American Gastroenterological Association, Atlantic City, N. J.

peptic ulcer. 2. Chronic ulcers which are tuberculous or syphilitic. 3. Chronic ulcer, the exact etiological factors of which are unknown. 4. Chronic ulcer in which there is a neoplastic process in the borders of the mucosa. 5. Gastric ulcer which shows carcinoma, not only in the borders, but also in the base.

If simple gastric ulcer of the punched out type changes to ulcer of the chronic variety, and it is simple peptic ulcer that we most frequently meet clinically, ulcers which are common in the adolescent and young adult, those under the cancer age, and if it later changes to cancer, then it should be demonstrated by laboratory and clinical methods.

There have been apparent misunderstandings of the terms simple acute ulcer and chronic gastric ulcer. A report of a pathologist of a percentage of cancer in a series of chronic ulcers of the stomach is understood by many to include the most common of all gastric ulcers; simple peptic ulcers which rarely come to the pathologist's observation except in cases of perforation. The low percentage of cases observed clinically showing malignancy years after treatment by gastroenterologists is due, no doubt, to the very great number of simple gastric ulcers treated, and the relatively small number of the chronic type. The reporting of high percentages of malignant ulcers have, we believe, resulted from a study of chronic ulcer material coming to the pathologist in large clinics and hospitals, which material includes a high percentage of ulcerating cancers.

If there is cancerous development in benign ulcers, simple peptic ulcers, the clinical reports show a much lower percentage than many have been lead to believe, and the actual percentage is probably not much greater than the almost negative findings of many good clinicians.

The impression that a patient suffering from simple peptic ulcer is in any considerable danger of developing cancer as a result will not be gleaned from the literature if it is carefully sifted for facts.

In order to get a larger amount of data than was available from my own records, I sent out a questionnaire which is as follows:

QUESTIONNAIRE

This questionnaire is sent out in order to secure data from gastroenterologists who have treated a considerable number of cases of gastric and duodenal ulcer.

1. What percentage of your cases of gastric and duodenal ulcer treated five to ten years ago have since developed malignancy of the stomach or duodenum?

2. What percentage of your cases of gastric and duodenal ulcer treated ten to fifteen years ago have since developed malignancy of the stomach or duodenum?

3. What percentage of your cases of gastric and duodenal ulcer treated fifteen to twenty years ago have since developed malignancy of the stomach or duodenum?

4. What percentage of your cases of gastric and duodenal ulcer treated twenty to twenty-five years ago have since developed malignancy of the stomach or duodenum?

5. What percentage of your cases of gastric and duodenal ulcer treated more than twenty-five years ago have since developed malignancy of the stomach or duodenum?

6. What percentage of your cases of cancer of the stomach or duodenum gave a history of ulcer symptoms covering a period longer than five years?

7. What is your conclusion from clinical observation as to the frequency with which malignancy follows gastric and duodenal ulcer as a pathological sequence?

EXPRESSIONS OF OPINION

Max Einhorn says: "It is my impression that cancer develops upon the base of an ulcer quite rarely, perhaps in about five per cent. of gastric ulcer. In duodenal ulcer, I have seen a cancer develop about nine months after gastroenterostomy in one single case."

Frank Smithies says: "In answer to question number seven, it is possibly an infrequent occurrence but does happen. No one can tell, given any proved gastric ulcer, whether it will heal, continue chronic but benign, or rapidly or slowly undergo malignant hyperplasia."

M. W. Rehfuss reports from one to two per cent. of cancer of stomach developing subsequent to treatment. He says that not more than twenty-five per cent. gave a history of ulcer symptoms over a period of five years. He states: "I feel certain that some ulcers become malignant, probably about five per cent. Malignant duodenal ulcers are extremely rare."

Kaufman states that in a very large number of true gastric cancer cases a remarkably small percentage give a history of previous gastric ulcer, or any gastric disturbances whatever.

Horace W. Soper, of St. Louis, says that in a gastrointestinal clinic he has seen no cases of gastric or duodenal ulcers become malignant.

Julius Friedenwald, of Baltimore, estimates about five per cent.

Alvarez says: "I saw very few gastric ulcers where they turn out to be malignant. I believe they have generally been malignant before I saw them."

B. B. Vincent Lyon's statement is: "My personal experience leads me to believe that the tendency to cancerous development of old gastric ulcers is less common than I would be led to believe has been the experience of a number of other observers."

G. W. McCaskey, of Fort Wayne, states: "When a diagnosis of ulcer was made and malignancy was later found, I think it was present but not demonstrable at the first examination. I think the transition occurs but rarely."

A. E. Austin, of Boston, says: "My experience is that if cancer follows ulcer it occurs within five years and in those between forty and fifty years of age."

Richard C. Cabot, of Boston, has seen no case developing malignancy under any of these classifications; has seen no cases of cancer of the stomach with previous ulcer symptoms over the five year period.

John L. Kantor: "In my personal opinion the reason that some believe that ulcers change to carcinomas is twofold: First, pathologically a carcinomatous ulcer may give the superficial impression that it is a simple ulcer undergoing malignant degeneration. This is purely inferential, however. Secondly, it is possible that the duration of some types of carcinoma has been grossly underestimated. I note that you set a limit of five years. Why can't a carcinoma go on for this length of time with symp-

toms, and possibly longer still without symptoms? In short, what evidence is there that a carcinoma or carcinomatous ulcer has not alway been such from the start?"

Harlow Brooks, of New York, reports from four to five per cent. and adds, "My opinion as regards relation between gastric ulcer and carcinoma have undergone a radical change. I doubt very much if any real relation exists."

The foregoing are not only answers to my questions, but an expression of opinion on the part of gastroenterologists of years of experience which has confirmed an opinion long held by me that nearly all, if not all, of the cancers supposed to have developed on the base of old or chronic ulcers, were in fact malignant ulcers from the beginning.

The etiology of chronic ulcer of which some writers state from sixty to seventy per cent are malignant is limited to syphilis, tuberculosis, ulcers of unknown origin and carcinoma.

Many of the cases of malignant disease of the stomach show no evidence of the condition until near the last stage of the disease. We have no means of knowing how slow these chronic malignant ulcers may be in reaching a point where diagnosis of a cancer may be made and the history of many cancer cases is that the patients live from one to three years after diagnosis of cancer has been made.

For many years we have been striving for a means of early recognition of cancer in the viscera, but up to the present it is necessary in all early cases and many late ones to wait for the report of the pathologist. This being the case, it seems to me that the only way to approach this question for practical clinical purposes is to consider those cases in which a diagnosis of ulcer of the stomach has been made years ago and in which the irritation stressed by many writers had probably persisted, and by a series of questions mailed to gastroenterologists, gather additional data, for careful consideration, from these specialists who have probably seen a much larger number of cases of ulcer of the stomach than has any like number of clinicians.

Their report based on clinical observation of the frequency with which malignant changes have occurred in gastric ulcer is evidence well worth while. From the nature of the problem, it is certain that any error will favor the positive rather than the negative conclusion. Gastrointestinal disturbances are more frequently due to other causes than to ulcer and a history of dyspepsia taken at the time of a diagnosis of cancer of the stomach might easily be mistaken for a history of ulcer when in reality it is not. The stomach may be definitely predisposed to malignancy in many individuals. The duodenum as a primary seat of cancer is probably cancer proof. I have only observed it involved as an extension of a neoplasm from the pylorus or the biliary tissues.

We are confronted with the question: Does an ulcer of the chronic type, where it is of such size (two and a half cm. in diameter) as to be demonstrable with the x ray, definitely change its character? Do ulcers of syphilitic, tuberculous or unknown origin take on cancerous development? Does irritation add cancerous growth to the syphilitic, tuberculous or the type of unknown origin? These changes are, I believe, possible.

While we know that malignant neoplasms ulcerate, we have, nevertheless, no proof positive that ulcers take on malignant development. A number of clinicians who have treated many cases of ulcer of the stomach and duodenum, are not certain that a single case treated in their clinics has since developed cancer, and others a possible one to five per cent. All these reports come from medical clinicians who have not resorted to surgery to prevent cancer formation in ulcer or scar and thus possible cases of cancer development would be greater among this group of cases if any such change occurred.

It is a mistake to speak of the degeneration of ulcer into cancer, because if such change does take place, it is not degenerative. Cancer is a constructive process—a purposeless one—a functionless new growth—a development of cells without function which later break down, but the beginning of such a growth should not be spoken of as a carcinomatous degeneration.

In the study of the data obtained by this questionnaire it is evident that most of us are not quite sure but that all of the cases of cancer of the stomach due to ulcer may not have been malignant from the beginning of the condition and symptoms considered those of ulcer may have been caused by the early stages of the malignant process. The time necessary for changes in the tissues of the stomach are of extreme variation; some develop slowly and others very rapidly.

There is a distinct lack of harmony among pathologists as to just what is to be considered as sufficient evidence to establish a cancer as having resulted from a primary benign ulcer. The finding of both ulcer and cancer in the same stomach is not proof that the latter was caused by the former. The incident of a cancer in a stomach which has in the past been the seat of ulcer is in no way conclusive unless we find a greater percentage of patients with cancer of the stomach who have had an ulcer, the benign character of which has been definitely settled, than the percentage of those who develop gastric malignancy without having had ulcer, that is, to reach such a conclusion from the clinical data one must know that a larger number of cases of cancer of the stomach occur in ten thousand proved cases of benign ulcer of the stomach than from ten thousand persons with no ulcer. The data I have been able to collect lead me to believe that no such evidence could be produced.

No previous history of gastric disease or a very short period of gastric symptoms prior to the beginning of the present cancer symptoms which date back six months to two or more years is the usual history.

CONCLUSIONS

1. The change of gastric ulcer of a benign origin into cancer is difficult to prove.

2. The evidence of the laboratory is not conclusive.

3. That cancer of the stomach is so far as we know not usually a transformed benign ulcer.

4. Reliable statistics do not support the contention that cancer of the stomach is more frequent in patients who have had benign ulcer than those who have not.

816 Empire Building.

A Case of Megacolon*

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Megacolon is a rare disease. Up to 1897 there had been only twelve recorded cases and only twelve more between 1897 and 1899, though at this time the disease had been well recognized and understood. With the increased frequency of x ray examinations in gastrointestinal cases the number of cases of megacolon reported rapidly increased, yet in 1921 Ladd could collect only 118 cases from the literature.

In their recent paper on megacolon (1), Fowler, Davidson, and Mellon have reviewed the history of our knowledge of the disease in such a thorough and complete manner that only the briefest résumé need be given here.

ETIOLOGY OF MEGACOLON

There is no general agreement as to the nature of the disease. Hirschsprung, who wrote the first good description of the condition in 1886, believed "that the evil lying at the root must be considered either as an anomaly of development or a pathological fetal process."

The disease has been variously attributed to obstruction, to a neuromuscular defect and to valve formation, also to unusual length of the sigmoid with kink formation, angulation, dilatation and hypertrophy. Hypertrophy is not found at birth but develops subsequent to the kinking and volvulus.

Spasm at the rectosigmoidal junction or at the anal sphincter have also been considered as the cause of megacolon. Meyers cured five out of six cases of constipation in children who had redundant sigmoids and one of whom had megacolon by the administration of atropin.

In the opinion of A. Hurst the disease is due to obstruction, which in turn is due "to achalasia or the absence of the active relaxation of the circular muscular fibres at the pelvirectal flexure when, at the commencement of defecation, a peristaltic wave passes down the pelvic colon into the rectum." The obstruction leads to hypertrophy and dilatation above it.

To my mind this theory cannot explain the well known fact of the occurrence of megacolon in the newborn and in the fetus. The fetus retains the meconium until birth (except in cases of fetal death, where the relaxation of the anus allows it to escape into the liquor amnii). The amount of meconium is small and produced very slowly; the intestinal contents are sterile and there can therefore be very little, if any, gas formation; it is therefore difficult to conceive that even with an obstruction there can be sufficient and prolonged enough peristalsis to produce the great redundancy and dilatation seen in the cases of congenital megacolon.

As just stated the disease has been found in the newborn and in the fetus. It is most commonly seen in infants, less frequently in adults. Hurst had a patient aged sixty-five and Herringham operated on a man of seventy-three.

The upper limit of the dilatation is usually in the sigmoid and descending colon, but never in the small bowel. The dilatation usually extends downwards to somewhere in the last three inches of the pelvic colon.

The history is usually of constipation beginning early in life. There are frequent attacks of abdominal pain with distention, sometimes with vomiting, which last from one to three days, which are relieved by a movement of the bowels which requires one or more enemata to bring about.

DIAGNOSIS

The diagnosis can usually be made from the history, from the abdominal distention and from the percussion of the dilated bowel, and also by a proctoscopic examination, from the ease with which the instrument can be introduced and the distance within the bowel that can be reached by it. X ray examination either by ingested meal or by barium enema will disclose the condition at once. Sooner or later in these cases complete obstruction develops, requiring operative treatment.

REPORT OF CASE

My patient, Jerry C., was thirteen years old. He was a full term baby, weighed eleven pounds at birth, and was nursed by his mother for ten months. He had measles and whooping cough in early childhood, otherwise he was well till the onset of his present trouble, at the age of nine. Up to this age his bowels had been moving daily but at this time he began to suffer from constipation. He had frequent attacks of pain in the abdomen in the region of the splenic flexure which would last from twenty-four to thirty-six hours. During an attack he would vomit several times. The pain occurred at intervals of one, two or three weeks and would last until by repeated enemata he would have a good movement of the bowels. Sometimes an attack could be averted by the administration of a warm enema. The attacks would leave him weak and compel him to remain in bed for several days. He had been in the habit of taking laxatives and enemata frequently. He was anemic and below weight. His circulation was poor; his hands cold and cyanosed. The chest was negative. The abdomen was greatly distended, and the descending colon could be mapped out by percussion.

A barium enema was administered and the patient x rayed.

The röntgenograms show the enormous dilatation of the colon from the rectum upwards to the middle of the transverse colon. Whereas in a normal adult one quart of barium mixture will fill the whole colon from rectum to cecum, in this boy three pints filled it only to the transverse colon.

I referred the patient to Dr. Jerome M. Lynch who was kind enough to give me the following report of the proctoscopic findings and also of the operation which he performed at St. Bartholomew's Hospital on July 18, 1922.

On passing the proctoscope into the rectum, one

*From the service of Dr. John L. Kantor, Department of Gastroenterology, Vanderbilt Clinic, Columbia University.

was immediately impressed with the enormous dilatation of the rectum and the varicosity of the rectal veins. The instrument passed into the sigmoid easily for a distance of thirty-five cm. The patient was then placed on his back, and on palpating the abdomen, the top of the proctoscope could be felt under the ribs about ten cm. above the umbilicus. I am sure

Fig. 1.—Röntgenogram of patient in a case of megacolon after opaque enema.

one could have passed a 40 to 45 cm. proctoscope before reaching the apex of the sigmoid.

The mesentery of the small bowel was studded with enlarged glands. This condition was exaggerated in the mesocolon. The appendix ran along the outer border of the colon as far as the lower border of the right kidney, plastered on a mesentery covered gland. The most marked gland enlargement followed the course of the colic artery, up as far as the duodenum. The glands were matted together and formed a tumorlike mass that one usually sees associated with tuberculosis. The sigmoid was enormously elongated to two or three times its normal length, and aboral to apex was a small pearshaped tumor. The urachus was present and patent.

An appendicostomy was performed with a resection of twenty-five cm. of sigmoid. End to end anastomosis drain inserted. Appendix brought to wound and catheter passed through lumen. Wound closed in layers.

PATHOLOGIST'S REPORT BY DR. A. F. COCA

Specimen consists of a portion of intestine about fifteen cm. in length. The wall appears somewhat thickened but shows otherwise no gross abnormalities. Accompanying the intestine is a portion of tissue of about the size of an almond, said to have been attached to the mucous surface of the intestine. The examination of the cut surface of this portion of tissue reveals a considerable infiltration of blood. The section of the intestinal wall shows no pathological changes. Those of the accompanying portion of tissue show the glands to be irregularly distributed through a connective tissue that is the seat of an acute inflammation characterized by leucocytic infiltration. Many of the glands are greatly dilated (almost cystic). The sections were submitted to Dr. James Ewing, of Cornell Medical College, who considered the process to be nonmalignant—perhaps not even truly neoplastic.

I saw the patient again eight months after the operation. He looked well, had gained eleven pounds, had not had a single attack of abdominal pain, and his bowels had been moving daily without having had to resort even once to an enema or a laxative.

CONCLUSIONS.

I believe this case is worth reporting because the disease is interesting and uncommon; because there

Fig. 2.—Röntgenogram of patient six hours after the ingestion of barium buttermilk meal. The enormous distention with gas of the splenic loop can be seen. The stomach is pushed far down and to the right.

are not many cases recorded of complete cure by operation; because it was accompanied by a marked and widespread enlargement of the mesenteric glands; and lastly, because, as there is as yet no general agreement as to its cause, our knowledge of the disease can only grow by the study of more and more cases, especially those that come to operation or necropsy.

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1873 Seventh Avenue.

The Investigations and Management of Cases of Suspected Gastric Carcinoma

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The most common form of cancer is gastric carcinoma. According to Hoffman's (1) estimate, the mortality from cancer in continental United States in 1915 amounted to over eighty thousand, and of these thirty-nine per cent. died of cancer of stomach and liver. He also stated that the cancer death rate was increasing at the rate of about 2.5 per cent. per annum. According to the returns compiled by the Census Bureau more than seventy-six thousand deaths from cancer occurred in the death registration area of the United States during 1921, and the probable number of deaths from this cause in the entire United States during 1921 was ninety-three thousand.

The tremendous and increasing mortality indicates widespread errors in diet and hygiene. It is manifest that in spite of all that has been said and done to bring about the early recognition of gastric carcinoma, comparatively little has been accomplished as yet. How many busy surgeons can record more than one or two of their patients living nine or ten years after operation for gastric cancer? Not until the laity are better informed and not until every physician has the haunting dread that *he* may be the man to permit some one to go to needless death, can we hope for proper progress.

In 1919 Deaver (2) published the statement that "cancer of the stomach—is perhaps the most insidious or at least one of the most insidious diseases we have to deal with, and one in which early diagnosis is so desirable and yet so rarely made," and urged the advisability of exploratory laparotomy in suspected cases.

Cole (3) insists "that in order to detect (gastric) carcinomas at an early stage all patients past forty years of age with even slight gastric symptoms must be examined röntgenologically (serial method) if the lesion is to be detected at a stage when a recognition of the condition is still of some value to the patient."

Friedenwald (4) in a most interesting analysis of one thousand cases of cancer of the stomach, found loss of weight in 98.5 per cent., pain in 93.1 per cent., anorexia in 89.3 per cent., vomiting in 89.3 per cent., tenderness in 89.3 per cent. He found occult blood in ninety-three per cent. of 216 early cases.

Ewing (5), quoting Zoeppitz, states: "Zoeppitz points out the nearly constant occurrence of ulceration or erosion in early lesions, and estimates the frequency of early symptoms as follows: occult blood eighty-five per cent., emaciation 89.9 per cent., anacidity 88.9 per cent., lactic acid 67.3 per cent., long bacilli 64.4 per cent., papable tumor 63.4 per cent."

With continuing gastric disturbance in any one past thirty years of age, the possibility of carcinoma should be considered, and careful investigation, including x ray examination, preferably by the serial method, if possible, should be made.

In considering a given case it is well to look into as many of the following details as may be necessary either to make the diagnosis clear or at any rate determine whether or not surgery should be advised.

1. Is there a history of indigestion coming on rather suddenly in a patient aged thirty or more whose previous digestion has been good; or has a patient with chronic indigestion suddenly without due cause begun to be worse?

2. Is there a steady loss of weight in spite of an apparently sufficient diet?

3. Is there persistent anorexia?

4. Is there vomiting without manifest cause?

5. Is there chlorotic anemia, progressively worse? Remember that the blood may be concentrated from defective absorption of liquids.

6. Is there impaired gastric motility as shown by food stagnation, determined by use of stomach tube or x ray?

7. Is there diminution or absence of free hydrochloric acid in the gastric contents, forty-five to sixty minutes after giving bread or a roll (seventy gm.) and plain water (350 c. c.)? In the absence of free hydrochloric acid, the presence of lactic acid (with a previous milk free diet) and the Boas-Oppler bacilli suggest the existence of cancer. As is well known—absence of free hydrochloric acid is not pathognomonic of gastric cancer; and on the other hand the hydrochloric acid may be excessive—presumably in the cases developing in ulcer near the pylorus.

8. Is there occult blood in stomach contents and stool? The test for hidden blood in the stool should be made in every case of subacute or chronic indigestion, care being taken to exclude blood from hemorrhoids or rectal ulceration. When the patient shows occult blood and is put to bed, given a nonstimulating liquid and soft diet, is kept free from gaseous distention and superacidity and given as much as a drachm daily of bismuth subnitrate; or if in suitable cases duodenal feeding be employed for two to four weeks, all evidence of occult blood should have disappeared from the stool by the sixth or seventh week at the latest. Persistence of occult blood beyond this period is highly suggestive of malignancy.

9. Does a positive "thread (6) impregnation test" fail to become a negative one under proper treatment? A definite blood stain at a definite point on the thread in repeated tests is evidence of a pathological condition. This may indicate nothing more than erosion or congestion, but one should not rest content until this test becomes negative.

10. Is there the suggestion of increased resistance in some portion of the stomach on careful palpation as the semireclining patient lowers and then relaxes the diaphragm? A small palpable tumor does not necessarily indicate that the case is hopeless, or even that a cancer exists.

11. Is there syphilitic infection? A Wassermann test is always desirable, and if positive, prompt and thorough antisyphilitic measures may be employed

for a brief period before reaching a positive diagnosis.

12. Finally and perhaps the most important of all, is there a characteristic filling defect, or deformity or localized impaired peristalsis in the stomach wall, or pyloric obstruction as shown by x ray examination? If the pictures are properly taken and interpreted by an able, experienced operator, a definite diagnosis can be made in the great majority of cases. As between indurated ulcer and cancer, the latter is characterized by a much more irregular contour. Fluoroscopic examination, while less accurate than the serial photographs in the writer's judgment, is used with great success by some physicians; and owing to the slight expense and general availability is sure to be used more and more. The day may come, and may it come soon, when every one suffering from gastric indigestion, even moderately prolonged, will be examined by the x ray. When this is attained, if only approximately, there should be a marked improvement in the mortality from gastric cancer.

Fig. 1.—Case III. Indurated ulcer (probably cancer) on the lesser curvature.

Whatever is done or omitted in these cases one should not fail, 1, to make the test for occult blood in the stool, and 2, to insist on careful x ray study.

If for any reason it is impossible to make a positive diagnosis promptly, the patient should be given suitable medical treatment under close observation. Definite improvement should take place in six or possibly seven weeks. This is especially important in differentiating bleeding ulcer from ulcerating cancer. If the blood in the stool does not disappear after four to six weeks of proper treatment, it is pretty certain cancer is present.

The following histories may prove of interest in this connection:

Fig. 2.—Case VII. Annular tumor of pylorus. Stomach in normal position.

Case I.—H. G., woman, forty-eight years of age, unmarried. History of indigestion and constipation for twenty-five years. Complained of discomfort after meals, lasting one and a half hours, followed by sensation of hunger. Taking milk made her feel better for a short time. Had been under a local physician's care for nineteen months and had not worked for that period. During this time was in bed in a hospital for three weeks. Physical examination showed stomach in a position of gastroptosis, its muscle lacking in tone. There was marked food stagnation with high acidity. An hour after the Ewald-Boas test breakfast, the free hydrochloric acid was 0, and the total acidity 104. There was no occult blood in the stool. The thread test showed a small, distinct blood stain near the pylorus. X ray diagnosis (Dr. A. J. Quimby): General ptosis. Adhesions of the first portion, and duodenal ulcer. Adhesions around the cecum and terminal ileum. Iliac stasis of great degree. Stasis in the ascending colon. Angulation of the transverse colon of unknown cause. The deformity about the pylorus was such that the röntgenologist thought there might be a possible growth. Operation was strongly urged by a surgeon, her family physician and myself and positively refused. This patient was put to bed in the Polyclinic Hospital and was given liquid diet and soft cereals together with suitable medication. Twenty-three days later the thread test still showed a stain near the pylorus. Later there was a gradual improvement in the patient's condition, the thread becoming negative.

For several years this patient had to be very careful as to diet, and took mineral oil regularly to avoid constipation. The weight, 99⅔ pounds, when the patient was first seen in February, 1913, had increased to 108½ pounds in October, 1913. By August, 1915, weight was 118¾ pounds. In reply to a letter of inquiry, this patient wrote on the first of February, 1922: "I am glad to say my digestion is very good, and I am able to eat a little of all foods without feeling any distress. In addition to this, I do practically all kinds of housework."

Case II.—T. W. K., a bachelor, aged eighty-two years. He had been living in hotels and restaurants, and eating unsuitable food. Stated that he had an attack similar to the present one, i. e., indigestion, distress and anorexia, twenty years previously and then felt fine until one month ago when he began to have dull epigastric pain; a sore feeling in the epigastrium; anorexia, nausea and sour vomiting for the past five or six days. The day the patient was seen at five o'clock he had taken no food all day. On physical examination nothing definite was found except marked gaseous distention of stomach and bowels; blood pressure 170-84. This patient was put to bed for observation in the New York Hospital, and owing to his age, temperament, and condition, no thorough investigations were undertaken at first to clear up the diagnosis, but it was feared malignancy might be present. Notwithstanding the fact that the patient was kept quietly in his room and given liquid and soft cereal diet, on the night of June 25, 1920, the patient, after getting out of bed, fainted and had a hemorrhage from the stomach, estimated by the house physician to be about eight ounces. Later there was marked melena. With rest in bed, a liquid diet and suitable medication, gradual improvement took place, but the stools were not free from occult blood until after August 12th, about seven weeks.

On leaving the hospital the patient was sent for a few months to Fair Oaks Sanitarium, and slowly but steadily improved. By May, 1921, his weight was 150 pounds. By December, 1921, his weight had increased to 165½ pounds and he was leading his usual life, though careful as to diet, and feeling very well. He has continued to improve. He was (spring of 1923), eighty-five years of age and reported spending an enjoyable winter in Florida. This case was one to suggest strongly the possibility of malignancy. The improvement in his condition shown by the disappearance of occult blood and gain in weight made it evident that we were dealing with an ulcer, which was probably located in the duodenum.

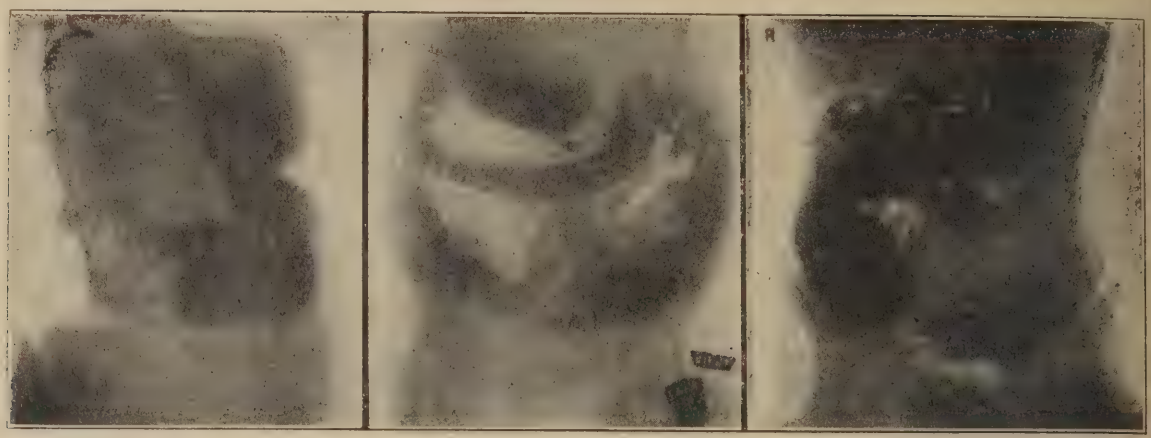

Fig. 3 Fig. 4 Fig. 5

Fig. 3.—Case IV. Chronic ulcer, thought to be malignant by New York X Ray and Pathological Laboratory.
Fig. 4.—Case V. Twenty-four hours gastric and colon residue. Small carcinoma at pylorus. Glands involved.
Fig. 5.—Case VI. Gastric carcinoma.

Case III.—E. V. E., woman, aged forty-six, married. Seen in August, 1912. History of indigestion for which stomach was washed when a young girl. In 1905 treated in Boston for sour stomach and gastric pain. Improved after two months. The same trouble annoyed her about eighteen months ago. Exercise would cause nausea and vomiting. Five months ago she began to regurgitate sour liquid and gas, five or six hours after meals. Now drowsy and sleepy about two hours after meals. Has pain in left epigastrium, going through to back and to left intercostal region. Pressure of corset increases pain. Palpation of stomach causes pain. There is tenderness in left epigastrium and constipation. Test meal shows acidity normal; but traces of blood present. No blood in stools.

An x ray examination by Dr. Lewis G. Cole showed "an indurated area" about two and a half inches from the pyloric sphincter. This does not have all the characteristics of malignancy. "I believe surgery is indicated," he stated. This patient was operated upon by Dr. W. A. Downes. A mass about two inches in diameter, thought to be malignant, was found high upon the lesser curvature, about one inch from cardia. Removal deemed too hazardous. Gastroenterostomy performed. This patient lived six or seven years after the operation, proving that the mass was an ulcer and not a cancer.

Case IV.—M. F. C., an unmarried marine engineer, aged thirty-two. Referred by Dr. C. W. Oakes for diagnosis, February 23, 1923. Has had trouble with his digestion off and on for sixteen years. Annoyed by gas in stomach and food did not seem to pass through it properly. At times regurgitated food and tasted it six or seven hours after eating. Had pretty constant pain in the epigastrium, running through to the back. One month ago for a period of four days vomited after eating. Pain worse about one hour after meals; may be worse after a light meal than after a heavy one. Eating diminishes pain for a time. Has lost ten or fifteen pounds in weight.

The patient had brought with him x ray pictures of the stomach and a report on them by Dr. John L. Cornish as follows: Stomach: "There is a filling defect seen at the greater curvature of the stomach in the pyloric portion which is persistent and can be seen on all the radiographs. The pylor portion appears narrowed and irregular on both t greater and lesser curvatures." "There is radi graphic evidence of a large gastric barium resid after six hours." "The radiographic evidence poin toward the presence of gastric malignancy involvi the pyloric portion of the stomach and obstructi the egress of the gastric contents." Further stu of this patient gave the following: Tenderness pylorus. Fasting contents, removed about fifte hours after a light supper including rice and raisi gave sixty-seven c. c. of contents with free hydr chloric acid 21. Total acidity 32. No blood. microscopic food retention. Ewald-Boas test brea fast at 76 minutes—211 c. c. Free hydrochloric ac 28. Total acidity 74. Blood absent. Stool show no blood and nothing else of definite significanc Thread test, negative for blood. Hemoglobin per cent. Red cells normal. Wassermann—neg tive.

The patient was returned to Dr. C. W. Oakes wi the diagnosis: "Chronic ulcer of stomach" and oper tion advised. Operation March 9, 1923, by Dr. Jo F. Erdmann, who found an indurated ulcer in fir portion of duodenum, causing marked stenosis. Th ulcer was excised and a Horsley operation performe This patient reported April 4, 1923, and was foun to be regaining weight and vigor satisfactorily.

Case V.—Mrs. R. R., aged fifty-one. Troub of five weeks' duration began with acute attack nausea and vomiting and some pain, then belching gas in the morning and after meals. Her fami physician put her on a diet of milk and steame gruels, later adding soups, raw eggs, bread and bu ter—with relief of symptoms.

A physical examination of the patient showed h to be fat and florid and with a systolic murmur base of heart and transmitted up and to right. Sto ach gave succussion. Digestion was prolonge There was no tenderness. Palpation difficult becau of adipose tissue. Examination of stomach show a large amount of stagnant three layer content One half solids. Free hydrochloric acid 8. Tot acidity 52. No blood. Hemoglobin 86 per cen Red cells normal. Urine small amount. Albumi No casts. No blood in stool. X ray by Dr. A. Quimby. Diagnosis—"Gastric delay of unusual d

ree, twenty-four hours, due to stenosis in the first ortion of the duodenum. Pyloric deformity due malignant infiltration of the extreme lower portion of the antra pylorica. Redundant sigmoid. tasis in the sigmoid." This patient was referred romptly by her family physician to a surgeon who ound a mass the "size of an almond" with enlarged ands, and performed a gastroenterostomy. I was ot present at the operation but have never ceased to gret that more radical surgery was not undertaken. his is the type of gastric carcinoma that should furish the greatest percentage of complete cures.

Case VI.—J. H., aged forty-eight, married, came nder observation at the Polyclinic Hospital the fall f 1912. For six months patient had been steadily sing weight and strength and suffering from modately annoying indigestion. Weight 103. A mass pproximately the size f a hen's egg could be elt near the umbilicus. ray showed an irregular filling defect on reater curvature, pyric antrum. A gastroenterostomy was performed at the Polyinic Hospital by Dr. V. S. Bainbridge, November 1, 1912, the ondition of the patient ontraindicating a complete operation. In late ecember the cancer ith the right end of ie stomach, a portion the duodenum, a portion of the pancreas, id also some enlarged ands were excised by ie same surgeon. The atient made an uneventful recovery, and ent back to work, first expressman and later doorman in an apartent house. He reorted March 4, 1922, oking and feeling ell. Weight 126½ ounds.

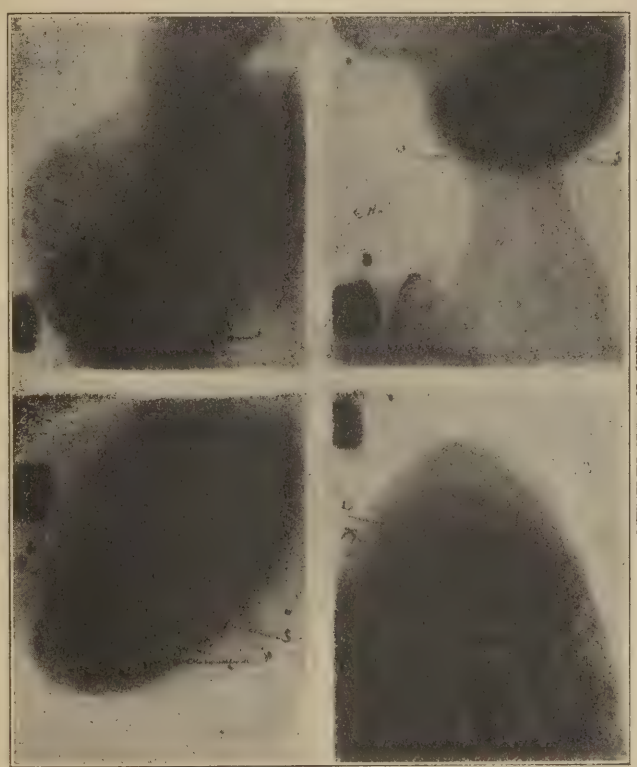

Fig. 6.—Case V. Showing very small carcinoma. Upper right x ray shows six-hour test. The upper left shows picture taken in prone position as does the lower left. The lower right picture was taken in the erect position.

Case VII.—J. H. B., woman, married. Acidy of stomach and occasional vomiting after meals ghteen years ago. Four months ago did not feel uite right. Two months ago on returning from acation began to vomit at night, usually at 2 m., sometimes later. Less frequent at first, ter nearly every night. Vomit sour and contained mucus. No blood or coffee ground material. or the past month had had daily lavage and a buttermilk diet with relief of symptoms. Had lost about ourteen pounds in the past three months. Functional examination after test breakfast showed contents one half sediment, absence of free hydrochloric cid and organic acid.

A small amount of mucus—ferments diminished. oas-Oppler bacilli absent. No blood. Three and half hours after two eggs, a roll and a glass of water, there was three layer stagnant contents. Lactic acid present. No blood. No Boas-Oppler bacilli. No blood in the stool.

X ray examination by Dr. L. G. Cole who stated: "Between the duodenum and the peristaltic end of the stomach was a space about an inch wide where the bismuth had been displaced, except for a small opening through the centre where the contracted lumen still exists. I take this to be an annular growth at the pylorus, with the worm eaten appearance which is typical of carcinoma." Prompt operation and excision was recommended. The patient was unwilling to be operated upon in New York; but a little later was operated upon by a surgeon of good standing in a neighboring state. He found no glandular involvement and did not excise the indurated mass which he believed to be ulcer, but performed a gastroenterostomy. The patient improved for a time of course, but died twenty-three months later from carcinoma.

This last case represents a group demanding special consideration and care. The operation of gastroenterostomy may be the procedure indicated, and usually results in surprising improvement in weight and strength. But we should not feel that our duty is done when this has been accomplished. If the mass in the stomach wall is due to ulcer, it should disappear almost entirely in three or four weeks after the gastroenterostomy and give a corresponding x ray picture. Should the x ray show little or no improvement in the filling defect at the end of a month, the indurated mass should be excised if the patient's condition permits.

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Foreign Bodies in the Stomach

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Foreign bodies in the stomach, though always interesting and instructive, are by no means uncommon occurrences. Since the time of Schwabe (1), who in 1635 removed a table knife from the stomach forty-one days after its ingestion, literature has been replete with numerous examples, all bearing testimony to the infinite variety of foreign bodies that may be found in the stomach. Some of these are swallowed by the insane, others by accident, and occasionally by professional mountebanks as a means of livelihood for the amusement of the public. Buttons, coins, pins, needles, safety pins, nails, spoons, forks, stones, keys, broken glass, false teeth and dental plates, hair balls—these are among the bodies most frequently swallowed. Those swallowed by accident occur mostly in children and are usually single, smooth and round—for instance, coins or marbles. Ofttimes they may be sharp and do damage in their passage through the gastrointestinal tract, although instances have been reported of large objects, such as spoons or forks, having been expelled by the patient per rectum without any apparent injury to the patient's health. Thus in Block's (2) case, in a period of eight months the following objects passed through the rectum of an insane patient: 157 pieces of glass, the longest being two inches; 102 pins, 150 rusty nails, three hairpins, fifteen broken fragments of iron, a large piece of lead, half of a shoe buckle and three small hooks. It is remarkable indeed that so many sharp and pointed articles can pass through the gastrointestinal tract without serious consequences. Not all cases are so fortunate; the foreign body may lodge in the esophagus or stomach and perforate or lacerate the walls. Thus in a case reported by Inch (3), at operation a perforation of the stomach from a protruding pin was found. After a long illness the patient recovered.

The length of time which the foreign body remains in the stomach before discovery is quite variable. Where it is swallowed accidentally, the accident is usually reported at once and treatment instituted promptly. Among professionals and especially among the insane, the foreign bodies may be present a long time before discovery. Numerous instances are reported in the literature of a most grotesque assortment of articles being retained in the stomach for long periods without injury to the mucosa or producing symptoms. Thus Benjamin (4) in 1907 reported a case of a glass and nail eater who ate pieces of glass as big as his thumb for twenty years and swallowed eight and ten penny nails for five years. At operation fifty-two nails in various stages of erosion, and five pieces of glass were removed. The nails were in bunches and a number were embedded in the stomach wall surrounded by exudate.

The symptoms in these cases are variable. In some, there is anorexia, epigastric pain after eating food and occasional vomiting. The vomitus is tinged with blood or sometimes free hematemesis occurs. In other cases local peritonitis has occurred. The size and number of foreign bodies may have but slight effect in the production of symptoms. Thus a single small object when swallowed may lodge in the stomach or intestines and give rise to marked obstructive symptoms, whereas multiple large objects may be swallowed and only cause vague gastric symptoms that may be present a long time before becoming more acute, viz., Benjamin's case quoted above. In all obscure gastric cases with vague gastric symptoms of long duration, accompanied by weakness and emaciation, the possibility of the presence of a gastric foreign body should be investigated. In these types of cases the x ray is an invaluable diagnostic aid and the earlier it is used the sooner can a positive diagnosis be made and prompt treatment instituted. It is upon these factors, early diagnosis and prompt institution of treatment, that the prognosis depends. Modern abdominal surgery has developed to such an extent as to make removal of foreign bodies lodged in the stomach a comparatively safe procedure. The percentage of recoveries is high, even when they have remained in the viscus for a long time. The sooner the foreign body is removed, however, the better is the result likely to be.

The end results in the vast majority of cases of foreign bodies when not removed is death, either from mechanical obstructions, erosions into vital structures, or direct or indirect infection. Where the foreign body or bodies are small and blunt, it may not be necessary to operate, as the patient may pass them per rectum without any harm. He should, however, be constantly observed for signs of obstruction; if these occur it is usually advisable to operate at once. Frequent stool examinations and x ray studies should be made in order to watch the progress of the foreign bodies.

In these cases, the patient should be cautioned against the use of laxatives. A diet of potatoes, rice, cream of wheat, bread, beans and agar will assist in safely passing the object. Where the foreign body is sharp, if small it may pass through without danger and operation not be necessary, but where it is large, it is usually best to operate at once, as the danger of perforation or obstruction is obviated by the low mortality of this type of abdominal operation. In all cases of doubt, it is best to err on the operative side, for upon early diagnosis and prompt operation depends the successful outcome of these types of cases.

Case.—The patient, Mrs. C. H., was admitted to my care in the female ward, Pittsburgh City Home and Hospital, Mayview, Pa., on November 25, 1921, complaining of a right hemiplegia. She was fifty-five years of age and a widow, her husband having died of gastric ulcer and perforation of the bowel. Her family history was negative. She had one child who died in infancy and no miscarriages. She had pneumonia twice and diphtheria once. She had been

operated on twice, once twenty-five years previous for a pelvic abscess and fifteen years later had her tubes and ovaries removed. Before the onset of the hemiplegia she had done practical nursing; since then had done very little but went around from city to city interviewing physicians in an effort to cure her hemiplegia. This stroke, she stated, came on suddenly about November, 1920; since then there had been no change in her condition in spite of treatment. Aside from this she had been fairly well; at times she stated she had a little pain in the upper abdomen bearing no relation to meals and passing away in a short time. There were no other gastric complaints at this time. Her bowels, she stated, had always been constipated. She had always been more or less of a nervous temperament, and even during the taking of her history and the examination, it was noticed that she seemed disinclined to talk or to permit proper examination.

A physical examination, shortly after admission, showed the patient to be a fairly well nourished adult, white, female, rather depressed and tearful. Scattered over her body were areas of brownish pigmentation, especially over her abdomen, and areas of vitiligo. Her eyes showed a slight bilateral arcus senilis, the pupils were very small, equal and regular, and did not react to either light or accommodation. The tongue was coated and dry, but in midline and steady. The chest was negative; her heart showed no abnormalities. There was slight tenderness over the stomach region but no rigidity or midline operation below the umbilicus. Slight radial sclerosis was present. The whole right side showed evidences of a right hemiplegia, spastic in nature. The urine was negative, and blood Wassermann also negative.

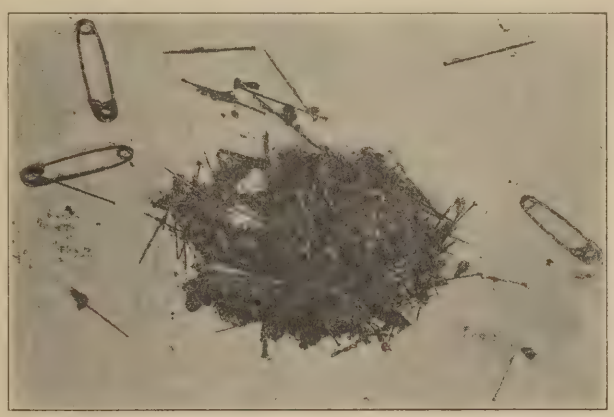

Fig. 1.—Large mass of pins removed from the stomach of patient in case reported.

On admission patient was placed in the hemiplegic ward. During her stay there she was depressed, very irritable, impudent and resistive toward the nurses. These facts, together with later developments in the case, make it highly probable that she had a psychosis, either of the involutional melancholia type or presenile dementia.

About ten days or two weeks after admission, the nurse noticed that the patient vomited slightly after meals, the vomitus containing food particles. She also complained for the first time of pain in the epigastrium and stated that her bowels had not moved for several days; because of her persistent irritability and expressed aversion to doctors, satisfactory examination was impossible and diagnosis a guess. Heat was applied to abdomen and a mild saline laxative given, but the bowels moved with difficulty. Her diet was restricted to liquids and gastric sedatives were given, but in spite of these measures vomiting continued. Enemata were but slightly effectual. The vomitus now contained small flakes resembling pieces of tissue and many blood clots. Similar material was present in the feces of the patient. It was evident from these facts that the patient had an obstruction somewhere in her abdomen; but because of the patient's resistiveness, the location could not be determined. She refused operation at this time, also further examinations. Her condition gradually grew worse until she could retain nothing given by mouth, not even liquids.

On December 26, 1921, she began showing definite evidence of acidosis with marked acetonuria and a distinct acetone odor to the breath. Everything by mouth was discontinued, and for several days ten per cent. glucose and five per cent. soda bicarbonate enteroclysis was given against the patient's will, but was poorly retained. For the first time since her admission she began to complain of intense colicky pains in the upper abdomen. These attacks were frequent and required morphine for their relief. The severity of these attacks and the gravity of her condition seemed to change her attitude, so that she seemed willing now to cooperate a little with us in further treatments. The vomiting still continued as before, the vomitus being of the same character as previously noted.

On December 30th, the patient made a confession to me in which she stated that a week or so before her admission to the hospital (which would be about November 18th) she had swallowed two paper packages of pins with suicidal intent, as she had been considerably depressed over her inability to work and on account of the hemiplegia. Asked how she was able to swallow these, she replied that she had taken them enclosed in fruits such as bananas or apples. She stated that she had been once told by a nurse that this was the easiest method of committing suicide. Shortly after taking the pins, she took some citrate of magnesia as a laxative, and since then had had attacks of abdominal pains off and on, which, during the past week or so, had seemed more severe. On December 31st, a rectal examination was done. It revealed marked impaction of feces, and on breaking up the impaction, a pin was felt and extracted. The bowels moved well after this, the stools containing many blood clots and shreds of tissue. On account of the acidosis 200 c. c. of a ten per cent. glucose and five per cent. soda bicarbonate solution was given intravenously with good reaction on the part of the patient. This was repeated every twelve hours for five days, at the end of which time the acetone odor to the breath had disappeared and there was no longer any acetonuria. During the administration, ofttimes the patient would show signs of tetany which ceased after administration. On January 2d another rectal examination showed another fecal impaction and six more pins were extracted. During the night the patient

vomited some watery material, in which was found two pins. The general condition of the patient at this time was much improved. She did not vomit nearly as often as previously and except for severe abdominal pains requiring morphine at times, no other symptoms were complained of. On examination of the abdomen a fairly large tender mass was felt in the right hypochondrium, the mass being indefinitely made out became of the tenderness. Another smaller mass was felt in the left hypochondrium and it, too, was tender. In fact there was tenderness over the whole abdomen, more marked in the right quadrant. An abdominal x ray taken at this time showed a large mass containing projecting pins and present on the right side, as in the accompanying plate.

On January 6th, the patient's condition having been sufficiently improved to warrant it, it was decided as the only possible means of saving her life, that an operation should be performed, with the patient's consent, which was accordingly done.

A medium incision was made and the peritoneum opened. A small amount of bloody fluid was present in the peritoneal cavity. The cecum was found filled with gas but no obstruction was found either at the ileocecal junction or at any part of the large intestine. The small intestines were collapsed and presented a peculiar appearance—one loop of bowel had a normal pinkish color whereas the next loop was cyanotic, this alternation of colors being present throughout the entire small intestine. No obstruction was found anywhere in the small intestine. A large mass was found present in the right hypochondrium in the cardiac end of the stomach. The stomach was contracted and on its anterior surface near the pylorus there was a large perforation covered by plastic exudate. A fairly large transverse incision was made in the stomach and the contents inspected. The latter was very bloody and the mucosa injected. A large mass of pins forming almost a complete cast of the stomach was removed in several pieces. One of the largest portions is shown in the accompanying photograph (Fig. 1). The mass contained several hundred pins, all intermeshed with blood clot. After cleaning out the stomach as much as possible, the incision was closed with catgut and silk. The perforation was closed with difficulty, the stomach wall being too friable. The abdominal incision was then closed in the usual way.

The pulse at the end of the operation was rapid and weak, and the patient in a condition of marked shock. She reacted slightly after intravenous saline and partially regained consciousness. Her condition grew worse shortly afterward and another intravenous saline produced temporary improvement. Death occurred the next morning at 8.45 a. m. from shock and acute cardiac dilatation. Permission for an autopsy was not obtained.

Several factors make this case interesting and instructive. 1, The large number and unusual character of the foreign bodies swallowed, also the unique manner in which this was done. Although it was not possible to determine the exact number of pins ingested, if we take the patient's statement as valid, she must have swallowed five hundred straight pins, the number contained in two packages in addition to eight or ten safety pins. This is a large number, although in several reported cases more have been removed at operation. Probably the largest number recorded in the literature was reported by Winslow (5) in August, 1918. He removed from the stomach of an insane man 1290 different objects, consisting chiefly of straight pins. Winslow's case resembles in many respects the case herein reported, but is more unusual than that in spite of the large number of foreign bodies present, and the fact that they had been present about two years, yet the patient made a complete postoperative recovery.

2. The danger of this type of foreign body to the patient's health. It causes marked changes in the stomach wall with thickening friability and, as in this case, perforation and local peritonitis, rendering satisfactory operation difficult. If allowed to go on without operation, death is inevitable either from starvation and acidosis or from septic peritonitis, the result of mechanical obstruction and perforation.

3. Nature's remarkable fight against odds. It was three weeks or more after the ingestion of the foreign bodies before the patient began to show any gastric symptoms.

4. The great value of the x ray as a diagnostic aid in these cases. Had it been possible to use it shortly after the foreign bodies had been swallowed, in all likelihood, with prompt operation the patient would have recovered.

5. The necessity for prompt operation in this type of case is emphasized. If allowed to go untreated, perforation and peritonitis result, naturally rendering operation more difficult but making for a grave prognosis.

SUMMARY

An unusual case of multiple gastric foreign bodies is reported, the foreign bodies consisting chiefly of the contents of two paper packages of pins swallowed with suicidal intent by a woman apparently insane. At operation performed seven weeks after the pins were swallowed, a large perforation of the stomach wall, with local peritonitis, was found. A mass of pins was removed from the stomach and the incision in the latter closed with difficulty. Death occurred in about fifteen hours from shock, and acute cardiac dilatation. The various types of foreign bodies are reviewed and their possible dangers to the patient's health. The necessity for early diagnosis and prompt operation is emphasized. Cases are cited from the literature to bear out these facts.

In conclusion, this case should serve as an object lesson to us in the future, so that in all obscure abdominal conditions, especially with a mass present, we should bear in mind the possibility of the presence of foreign bodies, should use the x ray early and frequently, so as to arrive at a prompt diagnosis, and finally, with early diagnosis, immediate operative intervention will give the patient the best possible chance for recovery.

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Factors Resulting in the Lowered Mortality of Prostatectomy*

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It is not my desire to present to those interested in the general practice of medicine, surgery and the various specialties, a technical paper dealing with details of surgical technic or an argument for one type of procedure in the handling of the prostate as superior to all others.

This work has become sufficiently standardized so that urologists are agreed upon the principles behind the general management of such cases. Each urologist should follow the technic which, without prejudice, he has found most successful in his hands and the following is a general presentation of the methods employed by me, which represent a slow process of evolution in my own practice and which have given me the best results.

The reason for this presentation is to place before you the general problem and certain phases of its solution to date.

In a paper presented before the New England Urological Society in January, 1920, I reviewed briefly the history of prostatectomy.

It is of interest in glancing over this history to note that from the discovery of the prostate by Nicolo Massa, a Venetian physician who died in 1563, and the association of the swelling of the prostate with urinary retention by Riolanus in 1649, up to the present period of enlightenment in urology, the investigators in the study of prostatic obstruction were focusing their attention upon a local bladder condition. Their efforts were directed solely to a relief of the urinary retention and the resulting mortality was high.

While the possibility of studying the obstructing lesion became possible through the introduction of modern cystoscopy, a real appreciation of not only the urological condition of the patient but its effect upon the organism as a whole was not recognized until kidney function tests became standardized.

A realization of the kidney disturbance arising from prostatic obstruction and its resulting back pressure led to a more careful study of the patient as a whole and especially of his cardiovascular system. The technic in the handling of these cases which has resulted from such study, has placed one of the most serious surgical procedures upon a solid foundation, making possible the restoration of health and function to the patient, giving years of comfort to those otherwise destined to suffering, impaired activity, and in many early death.

In dealing with a case of prostatic obstruction, an accurate diagnosis of the lesion is essential. This step must be considered as part of the preparation of the patient for operation. Preparation of the patient is the one element above all else that has resulted in the lowered mortality from prostatectomy.

Each patient from the time he first presents himself for study must be handled according to the particular indications in his case. Very seldom is it wise or possible to make a complete examination of the patient suffering from prostatic obstruction when he is first seen. The patient's history is important, a general physical examination gives a fair idea of his general physical condition, a rectal examination reveals much information regarding the prostate, but further investigation should be postponed.

Prostatic obstruction is present in men of advanced years, seventy-five per cent. in men over sixty-five years of age, in whom tissue changes have taken place (they are on the decline). The local condition has often progressed slowly, the body accommodating itself to the changes. A break in the compensation should be brought about as slowly as possible.

While we are beginning to see cases of prostatic obstruction in the earlier stages, due to education of the public, yet the majority still come with a well defined pathological lesion.

In an early case with indications of but a few ounces of residual urine, it may be safe to pass a catheter or even cystoscope the patient at once. I prefer to give a urinary antiseptic for a few days, increase the fluid intake and clear out the intestinal tract thoroughly before carrying out any intra-urethral manipulation.

If there is evidence of bladder distention it is better, if possible, to place the patient in the hospital before attempting to relieve the retention. If the retention is complete some relief must be obtained at once. Seldom is catheterization impossible if prop-

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erly carried out. A local anesthetic reduces the hypersensitiveness of the urethral mucous membrane. Manipulations must be gentle and the proper care used in each case. Rarely a silver catheter will have to be employed and assisted in its passage by elevating the tip of the catheter by means of a finger in the rectum, lifting it over the raised floor of the prostatic urethra.

No bladder containing over six ounces of urine should be emptied at the first catheterization. The catheter should be tied in and small amounts drawn off every hour, while fluids are forced by mouth, and by rectum if necessary.

An overdistended bladder may be relieved by suprapubic puncture when, with partial relief of pressure, catheterization may be possible or suprapubic drainage may be instituted at once. If the latter is resorted to under local anesthesia the bladder should be exposed and a clamped off mushroom catheter inserted into the bladder through a small opening, the bladder not being allowed to empty itself in the process. Small amounts should be drawn off at regular intervals as in the case of an indwelling catheter.

Too much stress cannot be laid upon the importance of not completely emptying an overdistended bladder at the first sitting. The complete removal of all back pressure upon the kidneys results in congestion of the kidneys and possibly complete suppression. While a gradual relief of pressure will be accompanied in many cases by uremic symptoms, the kidneys slowly become stabilized and the patient passes through the first and what should be the most critical stage in the relief of prostatic obstruction. The majority of patients will have drainage of the bladder by means of an indwelling urethral catheter while the kidney function is being studied by means of the phenolsulphonephthalein reaction, blood chemistry and observation of the patient for the disappearance of uremic symptoms such as a dry, coated tongue, loss of appetite or even vomiting and hiccough, abdominal distention, possibly fever and disturbed mental equilibrium.

The cardiovascular system is observed and especially the blood pressure which often drops with the relief of back pressure upon the kidneys, later becoming stabilized with the like behavior of kidney function. The respiratory system is often impaired and deserves special consideration. A complete flushing of the system by means of forced fluids (especially water) and colonic irrigations is probably of greater benefit than all other measures in reestablishing the kidney and cardiac functions.

When the patient's urethra has become tolerant to the urethral catheter, the urine cleared and the kidney function improved, a cystoscopic examination should be made. A cystoscopic examination is possible in nearly every case. The often distorted, elongated posterior urethra calls for the most delicate manipulation of this instrument. By using a small cystoscope, elevating the beak, if necessary by lifting it over the edge of the prostate with a finger in the rectum, rotating the instrument rather than moving it about in the bladder, and not having the bladder fully distended while making the examination, no harm will result and little discomfort accompany the procedure.

The information gained by such an examination is invaluable. The type and extent of the intravesical protrusion of the prostate is noted; often a definite hypertrophy is found in the bladder when no enlargement was evident by rectal palpation. A seeming hypertrophy may prove to be a fibrous prostate, malignancy may be discovered or a bladder growth, calculus or diverticulum of the bladder may be found. If the obstruction proves to be one calling for a prostatectomy and the patient has become stabilized, how shall we proceed with the greatest degree of safety to the patient?

The objects of the operation are to remove the prostate completely, thus eliminating the obstruction to do this, with as little disturbance or shock to the patient as possible, and to have normal bladder function after its removal.

There are two general methods of approach in this procedure, through the perineum and suprapubically. While, in the hands of the best operators each seems to involve about the same amount of operative risk, hardly any two operators follow the same technic in all its details. The actual removal of the prostate at the proper time when the patient has become stabilized in all his body functions, safeguarding against the possible operative complications should be carried out with little shock to the patient and should be an incident in the patient's convalescence from the broken kidney compensation and the effect of such a break upon the various body functions,

The technic employed by me during the past five years, with slight modifications, has been attended by a single mortality in a series of forty-two patients operated upon during the past year, the one fatality being due to a pulmonary embolus (occurring in a patient originally a bad risk) after the wound was healed, the bladder function normal and the patient was waiting to leave the hospital.

Aside from occasional cases in which a perineal operation is particularly indicated, or a punch operation advisable, the technic briefly is as follows:

Following the partial restoration of kidney function after drainage of the bladder with the indwelling urethral catheter, suprapubic drainage is established under local anesthesia in the manner before described. An indwelling catheter causes a varying amount of local irritation in the urethra as often shown by a urethral discharge, by edema of the mucous membrane about the vesical neck and a lack of complete relief of congestion of the prostate. That drainage is not complete by means of the catheter is evidenced by the frequent return of uremic symptoms on establishing suprapubic drainage even though the kidney function had become partially restored following catheter drainage. Time is not lost by this step for the wound is allowed to heal about the suprapubic tube. The bladder is now placed at complete rest, fluids may again be forced, bladder infection rapidly subsides, the urethra is relieved of the irritation from the catheter, congestion of the prostate is diminished and when the patient assumes a thoroughly "even keel," the prostate may be removed with an assurance of little accompanying shock or systemic disturbance.

A period of from five days to several months in a few cases has been allowed to elapse before com-

pleting the operation. The average time is ten days although in patients presenting serious heart or kidney complications one should not hesitate to allow the patient to go about with the suprapubic drainage tube in position, or leave the hospital to return later for completion of the operation.

I have seldom found patients restless under this postponement when the gravity of the situation is explained to them, and the ease and comfort with which they get about as well as go through the subsequent removal of the prostate is most surprising.

When the patient is ready for the removal of the prostate this step is carried out preferably under regional anesthesia, i. e., parasacral anesthesia supplemented by infiltration of the rectus muscle about the suprapubic sinus. This anesthesia should be given by an expert. The variations in the conformation of the sacrum necessitate experience and skill in its administration. When properly administered, the anesthesia is ideal, the operation being painless and muscular relaxation complete. There is less danger of pulmonary complications; less strain on the heart and kidneys; it renders possible the continuation of nourishment without interruption, to force fluids immediately after the operation and in the cases in which it has been employed I have seen no untoward effects.

In one recent case the patient presenting severe impairment of the myocardium having been refused by several surgeons as too poor an operative risk, went through prostatectomy under sacral anesthesia with no complications. A second patient given gas oxygen anesthesia for preliminary drainage had a pulmonary embolus and thrombosis of the dorsal artery of the penis, yet two weeks later, a prostatectomy under sacral anesthesia was entirely successful. A third patient had an acute dilatation of the stomach after gas oxygen anesthesia one year ago and recently went through a bladder operation under sacral anesthesia with no complications. This method of anesthesia represents one more refinement of technic which further eliminates the possibility of complications which in old men are not infrequent following inhalation anesthesia however skillfully administered.

With the patient under the influence of regional anesthesia the suprapubic drainage tube is removed. The sinus is dilated and if necessary, in stout individuals, enlarged slightly toward the pubis. The original wound is not reopened. With a finger introduced through the sinus into the bladder and cervical neck, aided by an elevation of the prostate by means of the fingers of an assistant in the rectum, the prostate is enucleated from its capsule and removed. The difficulty of removing the prostate through a comparatively small suprapubic opening even in patients with a thick abdominal wall has been much exaggerated. I have not found it impossible in any patient operated upon, and in the majority a exceedingly simple procedure. While hemorrhage always takes place in varying degree following the enucleation of the prostate, it is decidedly less severe in cases that have had preliminary suprapubic drainage. It should always be controlled. Any loss of blood at this time lowers the patient's resistance and further interferes with kidney function. I have found the Pilcher bag satisfactory for this purpose. It is easily introduced by means of a special sound which is attached to the urethral tube, the bag is partially filled with fluid and is drawn down into the prostatic capsule. Packing loosely placed about the bag fills the prostatic cavity so that bleeding is controlled by slight traction on the urethral tube which is maintained for not more than two hours. At the end of this time the traction is removed but the bag remains in position and can again be pulled tightly into the deep urethra if bleeding recurs. This we have not found necessary. The bladder drains through the urethral tube keeping the patient dry.

The pressure of the bag and packing often causes vesical tenesmus of varying degrees. With the short period of traction now employed tenesmus is not severe and disappears at once when the bag and packing are removed the following day.

With a small suprapubic sinus and a bladder free of blood clots, it is now possible to introduce again a mushroom drainage tube into the bladder through the suprapubic sinus. The tube fills the sinus and drainage is complete at once, the patient is not wet from poor drainage and he is in the same condition as on the previous morning before the prostate was removed.

The patient is encouraged to drink large quantities of water which is also given by rectum and by hypodermoclysis if necessary, elimination being thereby assisted; he is kept in a sitting position and convalescence should be rapid. In from seven to twelve days the suprapubic tube is removed, the sinus packed to promote closure of the bladder opening first, the sinus thus closing from the bottom. An indwelling catheter is inserted into the urethra. This is retained until the suprapubic opening has closed. The average length of time for this closure is twelve to sixteen days after the removal of the prostate.

As regards morbidity, I have not had incontinence or stricture resulting in any case operated in this manner. The sexual function is not apparently impaired and in no case has it been necessary to reoperate for the enlargement of any prostatic tissue left at the original operation.

REPORT OF A CASE

I should like to cite a recent case as representing a desperate type and the minor importance of the operative phase.

CASE.—A man, seventy-six years of age, entered the hospital with complete retention. He was thought to be suffering from broken cardiac compensation, nephritis and suppression. His myocardium was weak, the heart action irregular, blood pressure 90, nutrition poor, and it was questionable whether he would survive from day to day. The prostate was enlarged, retention was relieved by urethral catheter drainage. During a period of two weeks, under general supporting measures, his condition improved sufficiently to warrant a suprapubic drainage under local anesthesia, as it was impossible to maintain satisfactorily the urethral catheter in position. A period of low ebb was maintained for the next two weeks marked by semicoma, complete loss of appetite, intestinal stasis, blood pressure of 85, weak, irregular pulse and kidney function which gave no reaction with phthalein and as high as 68 blood urea. The greatest care was given to every detail of feeding, forcing fluids, care of the bowels

and medication with little improvement. A transfusion at this stage proved to be a turning point for he at once improved so rapidly that he could be moved to a convalescent home where his bodily functions were partially restored and he returned for the removal of the prostate which was accompanied by no reaction whatever. He was out of bed the following day and the wound healed at once. He has since gained thirty-six pounds and is now engaged in active work.

Success in this case was due to attention to every little detail in its management and not to any particular operative technic. From such a case which represents the greatest surgical risk, we have cases ranging to an occasional good surgical risk. As before stated, we are seeing earlier types of obstruction which in their relief should carry no real operative risk. On the other hand, we are tackling cases so low in function that operation formerly would not have been considered. I have advised against operation in but two cases of prostatic obstruction in several years because of their being a poor operative risk. One patient who had had uremic convulsions was later operated upon by another surgeon, and never came out of the anesthetic. The second, who had diabetes of years' standing, a well as a central nerve lesion, was operated upo elsewhere and lived but a few hours after operatio

A number of urologists have reported series o well over a hundred consecutive cases of prostatec tomy without a death. Possibly these series hav contained many early cases carrying little risk, o the operators besides being skillful and thoroughl conscientious, observing every precaution for th welfare of the patient, have been fortunate as well— or after such a long string of successes, there ma have followed a group of fatalities.

If one takes the bad with the good, and no sur geon encounters greater risks in any class of surgica work than in prostatics, there must be an occasiona mortality. That the mortality resulting from thi operation has been placed below five per cent. b most urologists, reflects great credit upon the wor of those who have made such a thorough, scientifi study of this complex problem, who have applie skill and patience in its solution, each perfecting hi own technic and frequently presenting it for dis cussion, all appreciating the common basis of th general principles involved.

40 East Forty-first Street.

Chancre of the Cheek

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In general, about six to ten per cent of all known chancres are situated elsewhere than upon the genitals. A larger percentage of women than men seem to acquire the disease in this way, although it must be admitted that fewer women present a chancre, coming for consultation as they ordinarily do in the secondary generalized period of the disease. Because of the greater susceptibility of mucous membranes to chancre formation, and offering as they do, better fields for the well being of the Spirocheta pallida, the mouth next to the genitals presents the greatest number of chancres.

Parts of the head are the site of syphilitic chancre in odd proportions. As always, one must refer to Bulkley's admirable collection of figures in his monumental, *Syphilis in the Innocent* for statistics. He lists 145 cheek chancres among a total of 9,058 located extragenital chancres. He added five cases of his own, all in males.

Case I.—We present herewith the photograph of our most recent patient with chancre of the cheek. The case is worthy of reporting as the history given by the patient was unencumbered with odd details. The patient reported to the West Side Dispensary and Hospital and complained of the lesion on his cheek which had been present about two weeks. He had done nothing for it, and wondered what it was. His habits as to living were rather exemplary and he had not exposed himself to venereal infection for a long period. He said that it was his habit to shave himself at all times, except that when he visited the barber shop for a hair cut, which he did at regula intervals of four weeks, he allowed the barber t shave him. The sore had made itself evident to th patient on the occasion of his regular visit to th barber, so that there was a period of no symptoms o at least four weeks. During this interval, there wa no change in the man's manner of living, and n mode of infection other than through the mediu of the barber was apparent. As far as we coul ascertain the procedure at the barber's for shavin was what it was in all such places, but we did ge the positive statement that the barber had gone ove his face twice. It was not possible for us to ex amine the barber, so we are not in a position to stat whether the contagion was mediate, that is directl from some lesion on the attendant barber, or in er mediate, that is through the medium of one of hi utensils or towels. The reason we particularly men tioned the double use of the razor was in order t bring in the fact that Reasoner definitely showe that a solution of soap is lethal to spirochetes i dark field experiments. The fact that soap lathe was applied twice to the patient's face would indicat that the spirochetes were in all probability from th person of the barber or present on a towel or powde puff, or other utensil used after the immediate shav ing. The patient did not remember having been cu or that the barber used a styptic stick. As th patient did not expose himself to infection by sexua contact, the contention that most, if not all, infectio of this character are due to contamination after th

patron leaves the barber shop, probably does not apply in this instance.

The clinical appearance of the lesion as shown by the photograph made the diagnosis of syphilitic chancre. The diagnosis was confirmed by demonstration of the offending organisms, the Spirochetes pallida. The patient despite every assurance that he had syphilis, refused treatment, and did not return to us. However, at a meeting of the Section of Dermatology and Syphilology of the New York Academy of Medicine at a subsequent date, we saw the man again. The primary lesion was still present, and in addition, he showed typical glandular enlargement behind the ear, and a macular eruption of secondary syphilis generally distributed.

Case II.—A man of sixty years applied for treatment with a lesion on the left cheek said to have been present about ten days. He gave a history of shaving himself and that one evening after shaving with usual good results and no cuts or abrasions, he left his room to go to work as night switchman on a railroad. He passed the rooms of his landlady, who was in the midst of her washing and standing at the tubs with soiled clothes about made an agreeable picture to the patient, who in giving the salutations of the day, playfully tilted the lady under the chin. In reprisal, the lady cuffed him on the cheek, but her blow was not so playful or else the cheek was struck by her nail, for the skin was cut, and blood appeared. The landlady apologized, stooped over, picked a towel from among those about to be washed, and used the end of it to stanch the flow of blood. A crust formed, and the man left for his work. The next time he shaved, the crust was removed with the razor, and this time, he used a fresh towel to stop the bleeding. The new crust which formed was not further disturbed, but as far as the patient could determine there was no indication of any healing process. The lesion seemed to be getting worse instead of better.

Numerous and varied were the clinical suggestions made at the time of examination at the hospital, among them: syphilis, either primary, or tertiary; tuberculosis; epithelioma; infection. Unfortunately, no dark field apparatus was available at the time so spirochetes were not searched for; blood for a Wassermann test was taken and subsequently reported negative, and mild wet dressings were advised. The patient did not return to us immediately, but we learned that he had become a patient at another clinic, where the official diagnosis was, infection, with non-virulent pus organisms. Some time later, the dermatological division of the hospital was invited to see a patient on the surgical side who had been prepared for operation for a huge carcinoma of the face, and who in addition presented a generalized eruption which required diagnosis. With other members of the staff, I saw the patient, and he presented a giant ulceration of the chancre site, and a remarkable pustular secondary eruption of syphilis. The Wassermann was reported four plus positive; treatment removed the clinical evidence of the disease, but as I remember the history of the case, the serology persisted positive up to the time I lost sight of the patient.

Case III.—We have records of another case of chancre of the cheek, although it is only a history. A young lady presented herself with a tertiary ulcerative syphiloderm of the forehead. As she was only nineteen years of age, we were hard put to determine when she could have been infected as there were no stigmata of congenital syphilis present. On questioning, we learned from the mother, that when the patient was an infant, her uncle, who knew himself

Fig. 1.—Syphilitic chancre of the cheek.

Fig. 2.—Chancre probably acquired in barber shop.

to be infected with syphilis, kissed his niece on the cheek apparently in a vain attempt to prevent inoculating her on the lips. A sore followed which took some time to heal, and the attending physician ordered precautions and treatment as for syphilis. Unfortunately, the treatment was not sufficient to entirely rid the young patient of her disease, and at nineteen, she presented the late manifestation mentioned above.

Efforts to diminish infection through the barber shops have been initiated in many communities by regulation and supervision of the trade. The larger cities have introduced many requirements for sterilization or near sterilization of instruments; have eliminated the use of the common powder puff; insisted on a freshly sterilized brush for each patron; the use of towels only on one customer; abolished the common shaving mug, and piece of soap. These reforms are excellent. However, so much depends on the barber's conscience that the best rules and regulations may all go for naught. Indeed, recently, we have seen a young boy, who undoubtedly acquired a syphilitic infection in a modern, supposedly regulated barber shop, through the definite medium of the barber being so good hearted as to promise to abolish, what he called, an ingrown hair. The barber used a pair of forceps, taken from a drawer or cabinet, made no effort to even cleanse this instrument, toiled around the site of the offending spot, and infected it with syphilis. When the boy reported to us, he presented a chancre on the side of the neck, and marked secondary skin manifestations of syphilis. The report of this case and the photograph are given through the courtesy of Dr. Williams.

Despite opinions of others that chancres of the cephalic region evidence greater tendency toward severe secondary syphilis, and involvement of the central nervous system, our experience with this location of chancre has not tended in this direction. Of course, the possibilities are always greater that the chancre is not recognized as early when located on other parts than the genitals, and in this way the

future of the patient may be endangered by delayed treatment or no treatment at all.

The prophylaxis of extragenital chancre and hence, syphilis, is a social problem. As far as the barber is concerned, it is logical that he ought not be allowed to practise more than barbering; and the wise patron will insist that once over be the limit in the public barber shop, to avoid the possibility of extra trauma on a skin already devoid of perhaps its greatest protection against infection, an unbroken skin, and a keratin layer.

15 Central Park West.

Prostatic Obstruction*

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The interesting subject of prostatic obstruction, replete with its massive collection of historical data, can only be touched upon in a paper of this kind. However, referring to Walsham (1) we read: "Hypertrophy or chronic enlargement of the prostate must be distinguished from enlargement due to inflammation. It seldom occurs under the age of fifty or sixty. It may be due to hypertrophy of all the tissues forming the prostate, or the glandular, muscular or fibrous tissue only. The enlargement may involve the whole prostate or may be confined to one or other of the lateral lobes or to the socalled middle lobe. The causes are unknown." Thirty-six years later no better definition can be given and we are as much in the dark as to its causes.

The inflammatory obstruction will be briefly considered later and malignancy will be mentioned. For the present we will consider senile prostates only. John Hunter 165 years ago ascribed the cause to inflammation. Inflammation in those days was a broader term than now; yet, little has been proved to controvert Hunter.

Prior to 1888 a number of methods were devised to do away with the constant use of the catheter. We find that suprapubic aspiration had been used; perineal section and draining; removal of a portion with the prostatectome—a punch described in 1892 (2); or with Jessop's prostatic scissors, similar to the well known tonsil guillotine, as well as many other schemes.

In 1893 J. William White (3) reported the beneficial results he had secured by double castration, and the same year Bier reported cures after ligating one or both internal iliac arteries. Cures were reported by others by both methods, as well as by vasectomy which was very popular with some English surgeons.

During this period others were thinking seriously of attacking the prostate directly. Schmidt, Guyon, McGill and Belfield evidently had performed prostatectomy prior to 1893, for Fenwick calls attention to failures due to leaving portions of socalled suburethral growths. At this time Belfield wrote that the object is to secure a "low level outlet through the prostate and is not simply excision of the overgrowth." The fact is that both Belfield's and McGill's work dates back to about 1888.

Pyle (4) more than thirty-one years ago described the operation of perineal prostatectomy by a curved incision in front of the anus, separating by blunt dissection between the bulb and the rectum, using volcellum forceps to remove the lobes, and a curved steel sound to steady the base of the bladder. This operation on a seventy year old patient was successful.

Removal of a part of the obstruction by the galvanocautery had been used in those early days, and like the punch operation was resurrected later.

In 1887, McGill of Leeds reported four operations. Two years later twenty-four operations were reported. In these, four patients died; seven no longer required the catheter, and thirteen were not improved. Not encouraging! At that time the hypertrophy was removed by a cutting instrument the pieces varying from that of a pea to a filbert or slightly larger. In McGill's twentieth case he cut off the middle lobe with forceps and removed the lateral lobes with his finger. This same procedure had been used shortly before by Atkinson. These were all transvesical operations.

In addition to chronic obstruction due to hypertrophy, to contraction of the vesical neck by the fibrous prostate, and to malignancy, obstruction may be due to acute inflammation of the prostate.

Many patients report that they have been free from all symptoms until they suddenly discover their inability to void. This disability usually occurs at night. These patients should not be urged to immediate operation. They should be given a hot bath, put to bed, and a soft rubber catheter tied in for twenty-four or thirty-six hours. After removal the patient may be able to void within a few hours. If not, repeat the procedure for the same period. I have seen patients go about for months and even years without operation. Recently a man of fifty complained that for eight hours he had been trying unsuccessfully to void. He was catheterized once since which he has continued to void. He has from one to three ounces of residual urine. It might be stated that this expectant treatment is particularly indicated in those cases where the prostatic enlargement is not dependent upon an actual overproduction of the interstitial fibromuscular tissue, or even overproduction of glandular elements, but rather is dependent upon some transient process, as, for example, an increased blood content resulting from an inflammatory process; or the type of cystic process in which the alveoli are widely dilated and distended with secretion. It is in the latter types of cases that the expectant treatment described reduces the gland to the point where urination is practically normal

*Read at a meeting of the Allegheny County Medical Society, Pittsburgh, Pa., December 18, 1923.

Cases which do not yield to treatment within a reasonable time must be dependent upon an absolute increase in either interstitial or glandular elements and justify operative interference.

The hard fibrous prostate, which may completely surround the vesical neck, thus forming a rigid ring or collar, is frequently, if not always, malignant. At least it is very common for malignancy to start up in or near the former site of the prostate. Therefore a guarded prognosis should be given at the time of operation.

The adenomatous growth, which is most often found, varies in size from an English walnut to a large apple or larger and may be present for years without causing severe symptoms. Retention sends the patient for relief. Do not mistake a urethral stricture, stone or the retention of tabes for retention due to the prostate; but all may coexist in the same patient. Although I have mentioned that the symptoms may occur suddenly, yet patients usually are troubled for a varying length of time by frequency, particularly nocturnal, small stream, difficult to pass, followed in time by dribbling and retention. A patient's bladder may become so distended that it overflows. Long continued back pressure produces irreparable damage. The bladder walls become thin and their musculature separated forming exaggerated trabeculation; the ureters and renal pelves, and even the kidneys themselves dilate, the latter becoming hydronephrotic and later pyonephrotic. The patient is then a decidedly poor surgical risk.

Rectal examination may give the impression of an enormous prostate, which disappears after fractional catheterization has been completed. Moreover, large prostates felt rectally are not the ones that produce urinary symptoms; a middle lobe the size of a hazel nut will produce complete obstruction and cannot be felt by the rectum.

The average urethra is about eight and a half inches long; when longer it should be regarded as suspicious. This together with the presence of residual urine and the history in a man over fifty is sufficient to indicate a cystoscopy, which, if possible, will enable one to make a diagnosis.

The treatment resolves itself into that of operable and inoperable cases; and again for the operable cases into preoperative, operative and postoperative treatment. The patients in the inoperable group may be made fairly comfortable by drainage and attention to their general health.

A patient who can be catheterized with a soft rubber or a web catheter, needs no preliminary operation. We frequently have patients wear an indwelling catheter several weeks or a month; and one of our patients wore a catheter for three months. Epididymitis occasionally occurs. We care for both the patient and the catheter. The catheter is left in several days, removed, the urethra irrigated with one half of one per cent. solution of liquor cresolis compositus, and the urethra allowed to rest until the time for the next catheterization. It is then reinserted and this method continued until ready for operation or in an inoperable case indefinitely. Should it be impossible to insert a soft or semisoft catheter and the patient require drainage, then under local anesthesia a small suprapubic incision must be made and a drain inserted. This was the original surgical procedure for the relief of prostatic obstruction.

A patient who has been using a catheter for years seldom requires extended preliminary treatment. He has acquired a tolerance which makes him a safe risk. Recently I operated upon two patients of this class each well above eighty, on the day following their admission, and both made good recoveries. To have done a two stage operation in either case would have been needless surgery. In Young's series of 1,049 cases only eleven or one per cent. required preliminary drainage and 462 of the patients were operated within four days after admission. Moreover, there is a mortality of from two to three per cent. in the two stage operation, and in cases where I found it necessary to do the preliminary section it was slower and much more difficult due to distortion of the parts.

In addition to catheter drainage, the patient should be saturated with fluids. In order that he may get water we order eight ounces of water every three or four hours containing hexamethylenamine and benzoic acid or even a placebo, in addition to tea, coffee and milk. In some cases several litres of Fischer's solution are given by the Murphy method. This is routine postoperative treatment.

Elimination by bowel and skin is encouraged, proper diet secured, and blood chemistry and uranalyses studied. We do not attach so much importance to the phenolsulphonephthalein test as formerly. Some of the most satisfactory results occur where lowest outputs were shown. The patient's general condition is the best indicator. With a clear intellect, moist uncoated tongue, a good appetite, no headache, little or no elevation of temperature, a good blood pressure and a healthy action of skin and kidneys, a favorable result may be expected.

Long continued retention with infrequent catheterization is followed by the symptoms produced by back pressure; e. g., dry tongue, loss of appetite, headache, and dullness of intellect; all point to faulty elimination; and blood chemistry and uranalysis together with the microscope and sphygmomanometer will show a nephritis. During one winter I turned away as inoperable three of such patients. One subsequently was operated upon by another surgeon and promptly died. The other two died at their homes in peace within three months. Years ago I witnessed an autopsy in a similar case and my mortality record has been lower since then.

I prefer local anesthetics up to the point of enucleation and in old patients this is the rule. It takes more time than gas but is best for the aged. I have even began enucleation before beginning gas, with very little complaint. After the bladder is opened a little gas or gas and ether will greatly facilitate enucleation by relaxing the abdominal walls. If the patient is nervous or even anxious I think general anesthesia should be used. I am quite through with spinal anesthesia, and although I have seen sacral anesthesia used I have had no personal experience with it.

As to choice of route, I think this depends largely on who is the operator and his idea as to what constitutes a good result. I did only perineal sections up to 1913. My first operation was performed January

22, 1908, on a man seventy-seven years old with a history dating back nine years. The perineal wound closed completely in fourteen days. In twenty-four days he left the hospital but with a resolving epididymitis. He had complete control of urination. In the summer of 1913 I did my first suprapubic prostatectomy, the reason for the change being numerous epididymites, one rectal fistula, and a perineal fistula of long standing. Young admits epididymitis in twenty per cent. of his series of cases. With the suprapubic operation epididymitis is rare as is fistula, although at the present time I have a patient with a pin point fistula which I expect will close up at any time. My choice is the suprapubic operation and I believe that any prostate can be removed by that route better than the perineal one will permit. At the same time one has the advantage of being able to see the site of the operation and to explore the floor of the bladder with the eye, using an ordinary Cusco or Collin vaginal speculum. There is no danger of urethral fistula or a tear into the rectum during the suprapubic operation.

In my opinion the preoperative and postoperative treatment of the prostatic patient is far more important than the operation. A skilful operator may lose his patient by lack of preoperative or postoperative care, or judgment. Outside of hemorrhage I know of nothing that will put a postoperative patient into shock more quickly than profuse perspiration. The perspiring patient is given at once one seventy-fifth or one fiftieth grain of atropine and this is ordered to be repeated in an hour if excessive perspiration continues. The second dose is rarely needed. A Murphy drip is awaiting his return from the operating room; and he is given water just as soon as he is able to swallow. Vomiting is no contraindication to its use. In all our patients we place a one inch tube in the bladder, and recently we have not been draining into a bottle but into the dressings; this we find permits clots to escape freely with less seepage around the tube. This large tube is removed the third or fourth day; but should the tube work itself out of the wound before its intended removal, it is not reinserted. The neighborhood of the wound is kept freely covered with boric acid at all times. This prevents much of the skin irritation formerly seen. No grease is used. The two silk worm gut sutures are removed about the ninth day. The patient is propped up on the second or third day and put in a chair about the fourth day if possible. The diet is regulated as for other surgical cases. The bowels are moved by castor oil about the third day. Care must be taken with enemas and none but a soft tube should be used. It must be borne in mind that old men bear narcotics poorly and should not be given except for extreme restlessness, and then codeine should be tried first. The wound usually closes by the end of the second week.

The results secured from operations on patients able to stand the operation are usually good, the urinary control being satisfactory. But the age and frequent low vitality of these old men makes them susceptible to pneumonia, pulmonary edema, cardiac embarrassment and embolism. I do not recall secondary hemorrhages or in fact any hemorrhage following the operation that atropine did not control, except in one instance; I lost one patient from hemorrhage some years ago when continuous irrigation was the fad. I suppose I got outside the prostatic capsule during the operation and failed to use a tampon in time. Very little bleeding occurs if one keeps inside the capsule.

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5118 Jenkins Arcade.

Bladder Disturbances of Nerve Lesion Origin

Their Nature and Management

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Disturbances of the urinary bladder are common, occurring at any age in either sex. The three most frequent causes are infection, obstruction, and nervous disorders—either functional or organic. We are here concerned with organic neuropathies; with infection and obstruction only as they may be concomitant factors. The mortality is high. This lends import to the condition. Those unfortunates suffering from bladder symptoms secondary to nerve lesions usually seek aid of the general practitioner or urologist first. Too often the neurologist and his function is overlooked unless some clinical manifestation such as tabetic gait is grossly evident. To perform properly our function as urologists in the treatment of these vesical upsets, the neurologist must be consulted. If we fail to gain this mutual cooperation when relief, comfort, improvement, and —on occasion—care may be afforded the patient, we fail in our obligation. By proper management much good can be done.

To understand better the manifold possibilities for abnormal vesical function on a neuropathic basis, let us briefly consider the nervous mechanism of the bladder. Langley and Anderson have shown that the bladder (rabbits, dogs, cats) receives motor fibres from, a, second to fifth lumbar nerves reaching the bladder in turn through the sympathetic chain, inferior mesenteric ganglion, and hypogastric nerves and plexus, stimulation of which fibres cause feeble contractions, followed by inhibition; b, nervi erigentes and hypogastric plexus from second and third sacral nerves, stimulation of which will empty the

bladder; c, fibres pass to periurethral musculature from the sciatic plexus through the pudic nerve. Thus the principal fibres emanate from the sacral cord. The spinal sensory nerves are found in the posterior roots of the first to fourth sacrals, especially second and third.

The urinary act in man (Redfisch) occurs thus: A small vesical urinary accumulation causes stimulation of bladder sensory nerve endings and produces a reflex internal sphincter contraction. A greater accumulation sets up mild reflex contractions of the bladder musculature (detrussor). It is by the spreading upward from the lower to higher centres that these additional stimuli occasion the conscious desire to urinate. In adults urination is an habitual voluntary act consisting of, a, tonus inhibition in lumbar cord thereby relaxing—inhibiting—the internal sphincter contraction; b, emptying of bladder by reflex and voluntary detrussor contraction plus aid by voluntary abdominal muscles. The external sphincter plays a small rôle, being a reserve urethral closure mechanism. Thus, with the extensive intricate and delicate nervous apparatus controlling the bladder with its many easily vulnerable points, we readily understand how a comparatively small lesion, central or peripheral, may bring about impaired function. The difficulty of correct interpretation of the clinical picture presented is manifest.

Neuropathic vesical disturbances fall into three general classes, depending on whether they are due to, a, irritation; b, sphincter spasm, or c, sphincter relaxation (paralysis). During the course of a disease, the three conditions may be observed in this order, paralysis being the status terminus. The earliest manifestations of organic nerve disease (e. g., tabes, syringomyelia, multiple sclerosis) may be vesical. Bladder neck hyperesthesia is present. The readily recognized symptoms, namely, hesitancy, frequency, or terminal dribbling, succeed.

Reflexly, the socalled irritable bladder is produced. There is variable bladder neck hyperirritability. The sources of peripheral irritation are well nigh legion, phimosis, smegma collections, balanoposthitis, venereal warts, preputial adhesions, urethral strictures, polyps and adenomata, chronic prostatitis, posterior urethritis (in the pars prostatica there are many highly sensitive terminal filaments), vulvitis, pruritis, vaginismus, labial tumors, inflammation of Skene's ducts, tumors of uterus or cervix, pericystitis, excessive coitus, renal and ureteral lesions, anal fistulæ, rectal new growths, helminthiasis, and other conditions. Any of these may produce reflex irritation and must be borne in mind in the management of all forms of neuropathic bladder disturbances.

Sphincter spasm (external) is not common in the earlier forms of cord disease and when marked, complete retention with incontinence of overflow ensues. If moderate, there is partial retention with back pressure causing fine bladder trabeculation.

Paralysis of the internal sphincter varying from a mild relaxation to total paresis is seen in such conditions as late tabes, syringomyelia, multiple sclerosis or transverse myelitis (lumbosacral). If there is disjunction of the lower from the higher centres as in traumatic transverse myelitis above the lumbar segments the socalled automatic bladder obtains. The stimulus of increasing distention reflexly produces detrussor contraction with practically complete emptying.

Neurological syndromes in which bladder disturbances are a common accompaniment are: cerebrospinal syphilis either congenital or acquired, usually in the form of tabes; cord tumors, status postapoplecticus, exophthalmic goitre, paralysis agitans, multiple and transverse myelitis, syringomyelia, tuberculous meningitis, the toxic neuritides (scarlatina, typhoid, diphtheria, lead, alcohol, etc.), and spina bifida. The last named condition must always be

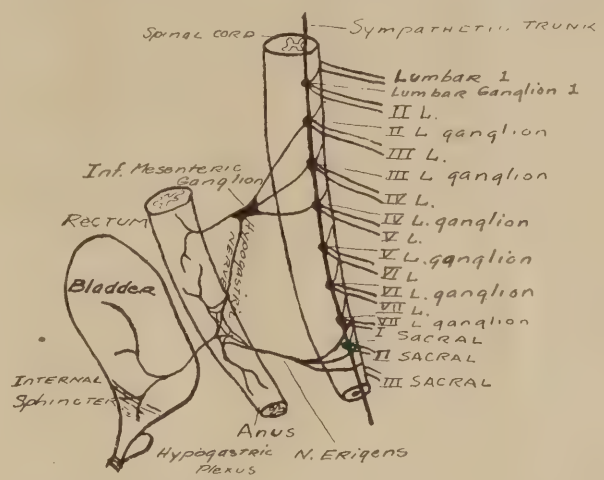

Fig. 1.—Schema of bladder and rectal innervation (*after Frankl-Hochwart and Fröhlich*).

considered especially when the etiology of abnormal vesical function seems underminable. Urinary incontinence may follow too prolonged use of the indwelling catheter.

Correct diagnosis rests upon accurate knowledge of disease. Space permits no detailed description of these various neuropathies we may be dealing with while directing our attention to an abnormally functioning bladder. Many of these disease processes are well known generally. In all except the various forms of peripheral neuritis, the posterior cord tracts are involved. In posterior tract disease, bladder disturbances are likely to be the rule. The urinary symptoms are essentially the same. We will first mention the less frequently observed lesions, and then consider in greater detail tabes dorsalis. Tabetic vesical manifestations are typical of and are commonly observed in this group of nervous diseases.

Tumors of the spinal cord, its membranes, cauda equina, and conus medullaris are occasionally encountered. Diagnosis in the presence of constant and severe root pains with associated progressive paralysis and localizing symptoms is not difficult.

Syringomyelia is due to a gliomatous new growth about the central canal of the spinal cord with cavity formation. Although bladder symptoms are not the rule, vesical analgesia, transitory sensory and motor—either irritative or paralytic—disturbances occur. A combination of an amyotrophic paralysis with retention of tactile and loss of thermic and pain sensation is said to be pathognomonic.

In transverse myelitis (compression or inflammatory), if the lumbar cord is involved vesical symptoms are present from the outset, the urine is alkaline and rapidly becomes ammoniacal. The con-

comitant cystitis is thought by some to be due to disturbed trophic influence. Myelitis in the thoracic region produces variable reflex functions. Reflexes below the lesion may be first abolished, then become exaggerated—even to spasticity. They may, however, become entirely lost.

Multiple sclerosis is characterized by localized areas in brain or cord in which the nerve elements are more or less replaced by glia tissue. The cause is unknown. Familial tendencies are noted. Several outstanding symptoms direct diagnosis. Volitional tremor, scanning speech, and nystagmus are the diagnostic triad. Spastic weakness of the legs, varying degrees of optic atrophy, the presence of the plantar reflex (Babinski), and absent abdominal reflexes are also to be noted. Bladder symptoms are present in seventy-five to eighty per cent. of these patients.

With tuberculous meningitis, bladder disturbances are not infrequent. Moreover, the appearance of acute urinary retention in a patient ill of tuberculosis is an early forecast of meningeal involvement.

The toxic neuritides, whether due to lead poisoning, alcohol, typhoid fever, diphtheria, or exophthalmic goitre may cause bladder disturbances without cord involvement. In severe cases, the wrist and foot drop, congestion of hands and feet with paralysis of the extremities and sphincters are characteristic. The symptomatology varies directly with the acuteness of the disease. The steppage gait is noteworthy.

Ninety per cent. of spinal cord diseases have their origin in lues. Syphilis in the form of gumma or pachymeningitis may produce bladder disturbances. In the form of tabes dorsalis, however, it is most potent. The mutual relation between tabes and urinary disturbances (with subsequent infection) may be realized when we consider that three fourths of tabetics have bladder symptoms (Erb). In one fourth, these are the initial symptoms. Only shooting pains are of greater primary incidence. Autopsy shows two thirds die of secondary urinary tract infection.

The diagnosis of tabes is usually easy. Certain pathognomonic symptoms are the rule. These are: the distinctive lightning pains, the loss of knee jerks and, what is equally or even more frequent, loss of the ankle jerk (Achilles), various ocular palsies, the Argyll Robertson pupil, the Romberg sign, and the characteristic ataxic gait. As previously stated, vesical upsets rank second in frequency of initial symptoms. Urinary leakage on coughing, sneezing, or sudden muscular effort may be the first symptom. Hesitancy or terminal dribbling may also appear early. There is early hyperesthesia of the vesical neck with a succeeding spasm of the external sphincter and a variable degree of retention, partial or complete. Paralysis of the internal sphincter is the end result. With this is associated bladder muscle fibre degeneration producing atony, residuum, and intermittent or continuous dribbling. The nature and course of the early symptomatology may be described as patchy. A characteristic intermittency and variability prevails. On inspection the genitals are likely to be atonic. Palpation reveals an atonic rectal sphincter. The rectum is flabby and ballooned.

Cystoscopy may be performed with impunity as a rule. An anesthetic bladder neck and relaxed internal sphincter afford a painless operation. The trigone lacks the normal firmness and appears flattened. A fine generalized trabeculation is common. It is most extensive, however, over the lateral walls and fundus. Cystitis may be marked. The ureter mouths are atonic, gape more or less, and are indurated proportional to the cystitis or ureteritis. Ureteral reflux with renal back pressure obtains. Such a lesion is demonstrated radiologically in the accompanying cystoureterogram of a case of rather late tabes which came under our care.

Bladder crises are rare. They are closely simulated by vesical stone. Especially so when the patient is suffering an acute attack of socalled "fit-of-the-stone." Illdefined contracted vesical neck, determined only by actual finger palpation, may cause symptoms in no wise different from those of advanced nerve lesion. Other obstructive lesions as hypertrophied prostate or urethral stricture must be ruled out. Hereditary or unrecognized syphilis must be borne in mind.

The prognosis of this group of cases is uncertain. It is always grave when urinary symptoms and infection appear early in the disease. The patient quickly dies of cystitis and pyelonephritis. Thus intercurrent infections, usually pulmonary or urinary, or both, kill the patient. The mortality from urinary infections is high (tabes sixty per cent.).

The diagnosis made, management and treatment become at once our problem. The objectives are, 1, to obtain and inspire confidence; 2, to keep the bladder clean, i. e., postpone infection; 3, reduce infection and residuum; 4, to relieve symptoms and if necessary, 5, to reeducate the urinary mechanism. The course of treatment herewith outlined applies to cord lesion cases, tabes especially. The peripheral neuritides are treated in like manner but are likely to be more or less transitory.

The acquisition and inspiration of confidence is naturally best performed by individual methods.

When the patient is first seen, the condition diagnosed, and the urine examined, even in the absence of infection, it is well to begin at once the administration of a urinary antiseptic. Urotropin ten to fifteen grains three times a day is perhaps the best. After twenty-four to forty-eight hours, the patient empties the bladder, a catheter is passed, and the residuum determined. Asepsis is imperative! Infection is especially easy because of trophic disturbances. About half of these bladders are infected. A residuum is found in three fourths and is often present before symptoms set in. If less than three ounces, catheterization twice a week will suffice; if under five ounces, every two days; if more, every day. At the end of catheterization, lavage the bladder with silver nitrate 1:5,000. It is well also to leave half an ounce of twenty per cent. argyrol in the bladder. The inorganic salt, however, displays a certain tonic action and hence is of greater value than the organic preparations. By this course of catheterizations the residuum is steadily reduced. This is brought about by affording the detrussor temporary relief from the strain of a urinary collection. In the absence of infection but presence of residuum urotropin must be administered, twenty gr. a day. In the presence of infection, it must be given

without remission (except for grave contraindications), forty to fifty gr. a day. Urotropin is of value only in conditions in which there is urinary retention and stagnation, whether in the bladder or in a hydronephrosis.

A periodical examination of the urine is of utmost importance and value. It is well said that the reaction of the urine (tabes) is of greater import than the Wassermann reaction of the blood. Copious fluid intake, a minimum of 2,500 c. c. a day is advised. With this quantity it is not difficult for the patient to urinate every two hours regularly during waking hours. This forms an essential habit. Under no condition should the bladder become overdistended.

Any remaining sphincter tone may be stimulated and encouraged by mild dilatation (Kollman instrument). Spasm of the external sphincter is best relieved by the cold sound. If marked, atropine is indicated.

As previously remarked sources of irritation producing disturbances reflexly should be eliminated. This entails a complete urological investigation including cystoscopy and rectal examination. A small meatus, urethral stricture or chronic prostatitis should be eradicated.

While the infection is being combated and residuum reduced, reeducation of the bladder mechanism is instituted. Much has been accomplished in the restoration of coordination, especially of the extremities (tabes) and much hope may be offered the patient with an incoordinating bladder. Degenerated nerves can not be restored but the patient is taught to utilize the imperfect mechanism remaining and to put into operation a new mechanism of nerves and muscles to replace those functionally lost to him.

This reduction is that practised by prostatic patients to regain use and control of their bladder sphincters after prostatectomy. The bladder is filled. The patient is ordered to void. Suddenly he is told to stop. The first few attempts seem hopeless. Gradually the exercise becomes fruitful. Eventually he is able to start and stop his stream at will. He must practise it at each voiding. As a rule, it is not long before he can repeat the Coué formula with truth. Such improvement inspires confidence. The frequent voidings (every two hours) eliminate much infectious material.

When lues is the underlying cause, the recognized therapeutic measures, arsphenamine, neoarsphenamine, silver arsphenamine are efficacious. Much care should be exercised, however, that treatment in late syphilis be not too intense as compared with that of early syphilis. Apparently much may be offered those suffering with late syphilitic manifestations by tryparsamide treatment as shown by the recent work of the University of Wisconsin investigators (Loevenhart, Lorenz, Bleckwenn, Hodges). Mercurialized serum intraspinally has given excellent results

With nicest attention to detail, we may offer invaluable aid to those suffering from a long lingering disease entailing much misery and a high mortality. Many can be restored to a livable and useful life.

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Stricture of the Ureter*

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Stricture of the ureter occurs frequently, as is evidenced by the fact that in my clinic at the Brooklyn Hospital my associates and I diagnosed and treated ten cases in August, eight cases in September, and five cases during the first three weeks of October, at which time this paper was completed. This would indicate an average of about one hundred cases annually, which I believe is a fair estimate of the number of these cases seen in our clinic during the past two years. I am confident this number will increase now that we are looking for them more carefully. Of these twenty-three cases sixteen were in males and seven in females.

This condition presents a fairly definite clinical picture; it is readily diagnosed if one but has it in mind, and it is easily relieved by simple manipulations which can be carried on in the office. And yet in proportion to its incidence it is rarely diagnosed and what is of greater importance, it is often mistaken for other pathological conditions, as a result of which patients are subjected to entirely needless and useless operations. I would hazard the opinion that each of us could readily recall one or more patients who have had appendix or gallbladder or tubes or ovaries removed, with no relief from their symptoms. I would further venture the opinion that many of these victims had stricture of the ureter.

The entire credit for bringing this matter to the attention of the profession is due to Hunner of Baltimore. In 1915 he read a paper before the Genitourinary Section of the New York Academy of Medicine which in my opinion marked an epoch in the progress of urology. In this paper he maintained that such a condition occasionally occurred as a primary urological lesion, and that if one had it in mind it could be readily diagnosed and treated. This paper had rather a cold reception and all of the discussion was entirely adverse.

Stricture of the ureter as a complication of tuberculosis, malignancy, or lithiasis had long been recognized, but there it was only an incident in the course of the major lesion. It was difficult to conceive of such a lesion existing *per se*. Not at all discouraged by criticism and doubt of the merit of his contribution he persisted in his investigations and continued to read and publish papers reporting his progress. In the spring of this year (1923) he read another paper at the New York Academy of Medicine in

*Read before the Medical Society of the County of Kings, November 20, 1923 (*From the Urological Service, Brooklyn Hospital*).

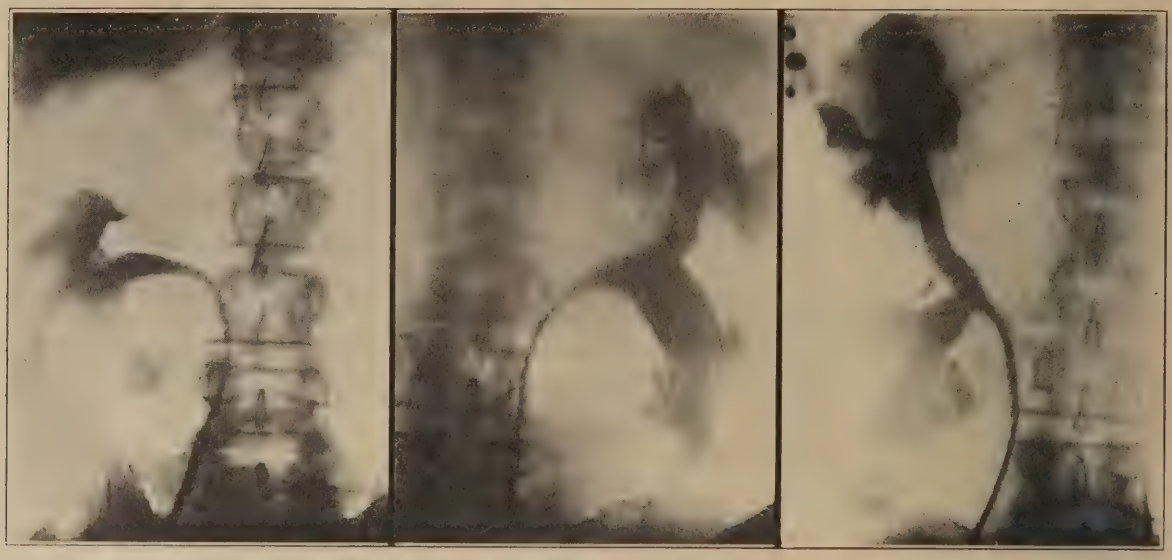

Fig. 1. Fig. 2. Fig. 3.

Fig. 1.—Normal pyelogram and ureterogram. The catheter has been withdrawn entirely from the ureter in all the illustrations. The kidney, pelvis and ureter are seen clearly outlined by the solution of sodium iodide.

Fig. 2.—Postpartum pyelitis; pyrexia, pyuria; stricture of the ureter. Practically all of these cases have stricture of the ureter. Note the fairly extensive stricture just above the bladder, with dilated and tortuous ureter above it. Note also the moderate degree of hydronephrosis with poorly defined calyces. This patient was promptly relieved by catheter drainage and pelvic lavage, and the pyuric cleared up after ureter dilatations and pelvic instillations.

Fig. 3.—Multiple strictures, moderate hydronephrosis. Calculus in pelvis which does not show in this picture, since it is covered by sodium iodide. Pyelotomy, followed by dilatations and instillations. These are the cases in which symptoms persist and calculi recur if the strictures are not dilated.

which he was able to report a large number of cases successfully treated, many of them with brilliant results. This time he went a bit farther and maintained that stricture of the ureter was one of the most common of all surgical diseases of the urinary tract and also made the point that in many cases where stricture and calculus were found together that the stricture was the primary lesion and the calculus a result and complication, instead of the other way about, as was commonly supposed. He also emphasized the importance of looking for and treating strictures after removal of calculus in order to ensure against a continuance of symptoms or a recurrence of the calculus. This paper was warmly received and the discussion was practically without exception favorable. Hunner had made his point and a new disease, having passed through the usual baptism of time and adverse criticism, had taken its place on our list.

One item which perhaps more than any other has served to prevent an earlier and more general recognition of this important subject is the fairly reasonable demand on the part of the critics that before accepting the proposition they must have the actual pathology demonstrated either at the autopsy or operating tables. Critics also remarked that stricture of the ureter was rarely if ever noted as part of the record of a complete autopsy. This last item is readily answered by the simple statement, which I believe is reasonably correct, that socalled complete autopsies rarely if ever include a careful investigation of the ureter unless attention is focused upon this organ. The cases in which this lesion is recognized rarely come to autopsy while the disease is under consideration, and if properly treated they rarely come to operation. Recently Hunner has reported a few cases which had been demonstrated at operation. I have had one in which complications arose demanding a laparotomy. At this time it was very easy to feel a thickened ureter wall at the site of the stricture.

Stricture of the ureter may occur at any point throughout its course, but is found most commonly in the lower third. They may be single or multiple and they are frequently bilateral. They occur as a linear constriction or may involve two or more inches of the ureter. The pathology I assume to be identical with stricture noted in any of the hollow organs, round cell infiltration, fibrosis representing the end result of inflammation, contraction and resulting diminution in caliber. Stricture of the ureter implies a preceding ureteritis at the point of the stricture. This may have occurred in the immediate or remote past, and may come about in one of several ways. I believe the etiological factors may be conveniently arranged in three or four groups. The first group, which probably includes the greatest number, includes those instances in which there has been a direct extension of inflammatory processes from neighboring organs, such as the bladder itself, the broad ligament in the female and the seminal tract in the male, the sigmoid on the left, and the retrocecal or pelvic appendix on the right in either sex. This infection may be by direct contact or through the lymphatics. As noted this lesion occurs most frequently in the lower third of the organ, and you will remember that the ureter passes through the broad ligament in the female and in close relation to the seminal vesicles in the male. Infections in these structures are of course common and generally recognized.

The second group represents the scars left after one or more attacks of pyelonephritis and ureteritis, many of which occur and pass unrecognized in infancy. We can all recall numerous more or less obscure febrile movements occurring in children which are relieved by bowel irrigation and some febrifuge containing among other things potassium

citrate. A careful urine examination in many of these cases would establish a diagnosis of pyelonephritis. These cases usually make prompt recovery but may and I am sure often do have scars remaining which produce symptoms in later years. Of course, at the present time, as a result of more careful urine examination in children these cases are promptly recognized, and with the employment of appropriate measures most of them respond promptly to treatment. In my opinion the few who do not respond are already beginning the formation of stricture and the trouble persists simply because one of the first principles of the treatment of any infection is overlooked. I refer of course to adequate drainage.

FIG. 4.—Acute pyelitis of one week's duration, beginning with colicky pain and hematuria. Note stricture partly hidden by bladder shadow, dilated, tortuous ureter above. Cured by catheter drainage and lavage, and later dilatations.

A third group includes blood borne infections from remote foci of infection, such as teeth, tonsils, and other structures. It may seem a bit fantastic to consider an infection being carried from a tooth root to some particular segment of the ureter, yet it is no more remarkable for this to occur than it is for the infection to be carried to the kidney or knee joint, or to produce a boil in some particular spot on the back of the neck.

One might add a fourth group including congenital narrowing such as is occasionally noted at the ureter meatus or the intramural portion of the ureter.

This paper does not include a consideration of stricture by tuberculosis, nor does it include kinks. These cases should be considered as an entirely separate problem.

The clinical symptoms are similar to those of ureter calculus and are just as variable. Some cases will present as the only symptom repeated attacks of ureter colic with entire absence of any symptoms in the interim between attacks. I have had several such cases, all of them readily and permanently relieved by dilatations. Frequency and urgency of urination may be the most prominent or only symptom noted, stricture of the ureter should be borne in mind as a possible factor in searching for a cause of this annoying complaint. The greater number of patients complain of a dull pain in the groin which may or may not be referred along the course of the ureter to the meatus or down the inner side of the thigh. This pain is usually fairly constant and steady, although there may be minor exacerbations such as are frequently noted during the menstrual epoch. The urine may or may not be infected. It is well to remember that clear sterile urine does not exclude stricture. When hydronephrosis exists as a complicating feature there may be a dull pain in the loin occasionally referred through to the corresponding hypogastrium. Some cases may present all of these symptoms at one time or another. Not infrequently reflex digestive disturbances of one sort or another are noted. This fact should be borne in mind when considering a possible diagnosis of that definite but much overworked lesion, chronic appendicitis. Many, perhaps most of these patients, will show an area of tenderness to deep palpation along the outer border of the rectus muscle for a short distance above and below the sacral promontory. This area is rather mesial to the point of greater tenderness noted in cases of appendicitis, and above that noted in tubo-ovarian trouble.

This brief outline of the symptoms and etiology is enough to attract our attention to the possibility of ureter stricture if one but bears it in mind. I do not pretend to say that every patient presenting this clinical history is suffering from stricture of the ureter, but I do maintain that every patient with such a story is entitled to a thorough and careful investigation for the purpose of confirming or refuting such a possibility. The diagnosis, once sus-

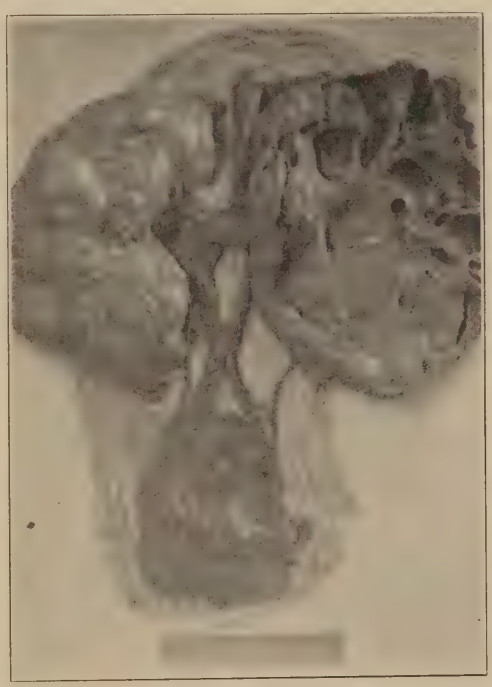

FIG. 5.—Multiple strictures—pyonephrosis requiring nephrectomy—a late case. This kidney could have been saved if seen earlier.

pected, is readily made. Hunner makes his diagnosis with a wax tipped bougie. The instrument is passed through a Kelly type of cystoscope into the ureter and beyond the point of obstruction. Upon its withdrawal one feels the catch or hang exactly as it would be felt with an olivary bougie in stricture of the urethra. This method is not so practicable in the lens type of water cystoscope in common use. I make my diagnosis by a combination of x ray and cystoscopic examination. An opaque catheter is passed to the kidney pelvis on the side under suspicion and a radiograph is made with the catheter *in situ*. The kidney pelvis is then filled with an opaque solution such as sodium iodide, fifteen per cent., and another exposure made of the kidney pelvis. The catheter is then gradually withdrawn, instilling at the same time enough of the opaque solution to distend the ureter, and another picture made including the renal pelvis and the whole length of the ureter. This gives a picture of the distended ureter, and points of narrowing and angulation are readily noted. Some of our critics say that these points of narrowing represent peristaltic waves. Perhaps some of them do, but when they occur at repeated examinations in the same spot, the evidence of stricture seems to my mind convincing. This method of examination also provides us with an opportunity to make a careful survey of the whole urinary tract, including differential functional tests, careful urine examinations, etc. This I believe is essential and should be done in every case.

The treatment of stricture of the ureter is gradual dilatation, exactly the same as treatment of stricture of the urethra, except that it must be done through a cystoscope. It may be necessary to start with a filiform bougie, gradually increasing the size up to a 6, 8, 10, or 12 French, depending upon the requirements of the individual case. It is well after each treatment to instill a small quantity of twenty-five per cent. argyrol.

Treatments may be repeated at intervals of one, two, three, or four weeks, depending upon the tolerance of the patient to cystoscopic manipulation. This procedure is carried out in the office and usually entails little discomfort on the part of the patient. Not infrequently, however, it is followed by a more or less sharp reaction, coming on a few hours after the treatment and lasting for several hours or several days. This reaction takes the form of tenesmus and pain over the kidney and ureter. It is readily relieved by the usual measures.

Many of these patients appear to be permanently relieved by one or two treatments. In fact my attention was rather forcibly directed to this matter several years ago by many patients who presented themselves at my clinic complaining of pain in the loin and some frequency of urination. We would put them through our routine examination including careful cystoscopic and x ray studies, the latter including a pyelogram, but not, at that time, a ureterogram such as we do at present. They would be asked to return a few days later for a report on the examination and advice as to treatment. A careful survey of all our findings might be essentially negative and we felt that we had failed to establish a diagnosis. Nevertheless they would return at the appointed time and volunteer the information that, whatever we had done, we had cured them. This happened not once but many times, and we feel reasonably certain now that these patients were suffering from a stricture of the ureter, and that they were temporarily at least relieved by the simple passage of a catheter.

Many patients are not so fortunate, and require repeated treatments over a period of several months. It is well in all cases to have them report for treatment at gradually increasing intervals for a few months after the relief of symptoms in order to ensure against a recurrence of trouble.

SUMMARY

Stricture of the ureter independent of any other surgical lesion of the urinary tract occurs commonly. It is easily diagnosed and responds readily to simple nonoperative treatment. If neglected it may and often does lead to hydronephrosis, pyonephrosis, and eventual destruction of the kidney. Failure to recognize it has resulted in countless numbers of needless and useless operations.

The Male Climacterium; Its Clinical Significance and Treatment

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The word climacteric is derived from the Greek *Klimakter,* meaning a step of a stair or ladder which was used to designate a dangerous period in life, and was originally equally applicable to either sex although it has been customary to apply it only in the case of the menopause in females.

It is an established anatomical fact that the early methods of embryonic life show no sexual differentiation, and that the cellular elements that ultimately undergo variation and develop into the sexual apparatus of male and female are indifferently present in either sex not only up to a certain period of intrauterine life, but in a rudimentary form throughout the entire period of human existence.

Since it must be admitted that the sexes begin and end life in marked similarity, the period of differentiation commences at puberty, and this suggests that the second change, or the change that brings the sexes together again, occurs at about the same epoch after puberty in both sexes. At about the menopause age in woman, man also becomes unstable from a mental and nervous viewpoint, and although he has no menstrual flux, as in the case of females, he does show every other symptom, mental and physical, that characterizes the change in the female.

The man at this period has reached an age when functional vitality ceases to be sufficient to properly

invigorate all his organism as in his younger days. He gives evidence of exhaustion in line with the physiological law that the last to develop is the first to show evidence of decadence. The man has reached his climacteric.

Sanctorius (1) seems to have been the first to mention the climacteric in connection with men in 1728. From the viewpoint of body weight he found that in men there was a monthly increase of one or two pounds followed by an increase in urinary output and accompanied by lassitude and a feeling of heaviness; this suggested a monthly cycle in the organism of men.

According to A. Church (2) the monthly increase of weight in men was confirmed by Belfield of Chicago, who also observed a phosphaturia analagous to that experienced by women just before menstruation.

The accepted real climacteric period or menopause which may be regarded as coinciding with life's full maturity is a well recognized event in the life of women, but it is not so generally appreciated that men go through a similar readjustment of tissues though after a less dramatic method and probably at a somewhat later age. The cessation of menstruation in women results from the functional death of the ovaries; it is usually accompanied by disturbance of the vasomotor and nervous systems as well as being a time of special likelihood to the development of disease or for the manifestations of disease previously more or less latent. In men at a period of life from about seven to ten years later than the onset of the menopause in women there is a similar susceptibility to the awakening or arousing of latent diseases and there seems to be at that period, just as is the case in women, an upset in tissue equilibrium conducive to the establishment of pathological conditions.

Halford (3) in 1831 noticed and described conditions in men which he termed climacteric diseases. Others asserted that there were rhythmic changes in the blood pressure in both sexes at definite periods. That some relation exists between certain critical ages in life and the activity of the sexual functions has long been maintained. In both male and female the fifteenth year corresponded approximately to puberty and in women the forty-second or forty-ninth year is not uncommonly the date of the menopause.

In man at the age of sixty-three—his *grand climacteric*—some assume that owing to the cessation or marked diminution of the activity of the testicles a profound change takes place in the body, and that this change corresponds closely to that supposedly dependent on the more sudden alteration in the function of the ovaries at the menopause in women.

An editorial (4) in discussing the male climacteric remarks "that certain tolerably characteristic symptoms, not unlike those presented by women in the change of life, are undoubtedly manifest in many men about the age of sixty-three will be vouched for not only by physicians in general practice but also particularly by nerve specialists to whom these patients turn for relief. Attention has been focused on these symptoms by Mendel (5) when he speaks of the "climacterium virile" with lack of emotional control and a tendency to shed tears, combined with outspoken signs of depression, disinclination for exertion, lack of will power and irritation; other symptoms sometimes prominent being dizziness, sense of pressure in head, hot flushes and palpitation of the heart."

In connection with these observations the question at once arises whether these symptoms are, in reality, due to a disturbance in the internal secretion of the testicles, or whether they can be the result of the arteriosclerosis which develops almost with regularity at about this age; and if there may not be a relation between testicular function and vascular integrity in the male. Such questions are not easy to answer.

The defenders of the doctrine of the sexual origin of the male climacteric point to the nervous, emotional and vasomotor phenomena which follow castration analogous to menopause symptoms which are brought about artifically in women by bilateral oöphorectomy. The objection that the natural male climacteric may depend upon arteriosclerosis rather than upon retrogression of the activity of the sexual glands is met by the argument that the arteries are not always sclerosed when the climacteric symptoms are met in man; and that when they are, such sclerosis might be considered as evidence of the importance of the internal secretion of the testicles for the normal reglation of the circulatory apparatus and for the welfare of the general metabolism.

Other opinions while regarding the symptoms referred to as dependent upon anomalies of internal secretion suggest that they owe their origin not to changes in the functions of the testicles alone, but in addition, to alteration in the activities of other related glands, notably the prostate. It seems unquestionable that some functional connection exists between the prostate and the testicle.

The large amount of investigations carried out within recent years showing the nature and functions of the internal secretion of the interstitial cells of the testicle renders it extremely probable that the climacteric changes in the organism of man are mainly dependent upon changes in this secretion. The senile organism manifestations are generally accompanied by impotency even though sexual desire persists. The diminution of vital capacity, with lessened activity of secretory and excretory vigor is a clinical manifestation that life has crossed its summit and that the bodily organism has entered upon the downward grade of its duration.

Acute illness in man or woman occurring within the limits of the climacteric is attended with more than the usual risks, the resisting powers of the organism being then apparently less competent to battle with infective or toxic invasion. But it is the chronic ailments existing at this period of life that demand the closest attention and interest. There are certain of them that, on account of their frequency, stand out conspicuously. Growths of all kinds, previously slow, at this time show great activity. Arteriosclerosis, interstitial nephritis, and diabetes form a group of diseases which, with surprising frequency, become manifest in men between the ages of fifty-five and sixty-five. These conditions no doubt existed for a long time, but probably their development was checked by agencies charged with general defensory powers as well as with the

maintenance of virility in the organism. The weakening of such defences at the period of the climacteric gives these chronic ailments referred to full opportunity to progress unchecked. The man may not feel ill but he is easily tired and quite unfit for the amount of exertion previously habitual to him. Although he eats and digests fairly he fails to keep his nutrition to the correct mark and he appears emaciated. He no longer has the same grip on things.

In such men a process of sclerosis is probably being effected which reacts on the particular tissues determined by personal tendencies or inherited qualities. The common antecedent in all cases is strain continued almost incessantly for fifty years. Domestic straits, financial worries, emotional storms and mental anxieties, enter into the lives of those who are strenuous and ambitious to achieve worldly success. The stress and strain fall primarily upon the nervous centres which become devitalized and unable to control organic functions.

None of the organs of nutrition and elimination are any longer equal to their task, a fact which is all the more important seeing that many such men have been habitually good eaters and that but few have taken exercise of any kind. The slowed nutrition, autointoxication, and the diminished vitality with neuropathic symptoms are the manifest symptoms of the failure of some governing power regulating the organic processes and which, as stated, are most probably, as far as our present knowledge goes, connected with the failure of internal secretions.

Neurologists are too prone to concentrate attention upon the psychical aspect of these cases, but what the patient needs is careful advice concerning the nature of the male climacteric and the changes that accompany it. The marvelous effects which in many cases have followed testicular transplantations in the senile point to this method of therapy as that which offers the most hopeful relief in this field.

Thewlis (7) refers to a typical case of the senile climacteric in a man of seventy-three years. In this case the principal change observed was in the mentality. Mental deterioration proceeded rapidly but irregularly, the usual mental attitude being agitated and depressed. This man also showed sexual recrudescence, the object of his sexual desires being a middleaged married woman. Six months after the initial manifestations of the senile climacteric in this patient he is passing out of this period into the somatic state of senility and the mental state of senile dementia. His appearance bears out the statement of his friends that he aged ten years in six months. His bearing is less erect; he has lost weight; his face is wrinkled; his expression is apathetic; he is careless about his person, etc., his walk is slower. The degenerative changes have been quite uniform.

During the climacteric this man showed maniacal outbursts, periods of depression and amentia; there were delusions, hallucinations and phobias with lucid intervals. The mental aberrations gradually disappeared leaving a weakened mind, the true dementia. The sexual recrudescence entirely subsided.

Thewlis says that the senile climacteric being one of the physiological critical periods it cannot be prevented nor need anything be done if the mental and physical deteriorations proceed uniformly and no active or distressing manifestations appear.

In considering the therapy of patients suffering from the effects of testicular retrogression and consequent clinical manifestations resulting in the symptom complex discussed in this paper, two indications for treatment present themselves. In the first place, a thorough investigation of the physical status of the patient is essential. We must endeavor to eliminate the presence of organic disease of all sorts and rectify metabolic digressions which, in themselves, may give rise to symptoms analogous to those under consideration, in which case it would, of course, be wrong to advise or do anything other than eliminate or ameliorate the existing pathological process responsible for the patient's objective and subjective manifestations. Should there be no organic disease, nutritional disturbance or other factor responsible for the patient's condition, and if the diagnosis by a process of elimination directly points to endocrine disturbance, then two avenues of relief are open.

First.—Attempts at vasoligation, in which event the patient should be apprised of the operative trauma that is to be inflicted upon his vas deferens and consequent sterilization of the corresponding testis; and if, after he is made to understand the possible advantages and frequent failures of the operation his consent is obtained one may occasionally obtain good results from this procedure.

On the other hand, if the case be one where there is distinct gonadal pathology often a homotransplant from a near relative of the patient or other human material or, perhaps, a heterotransplant from the higher anthropoids should be advised. If, in addition to gonadal dysfunction, thyroid inefficiency is found, (let it be said at this juncture that a metabolism test is always desirable in cases of this class and very often will throw light on an otherwise obscure field) then in conjunction with transplantation, thyroid therapy either by transplantation or per os, is clearly indicated. In aberrations of other endocrines, clearly manifest in a given case by specific manifestations incriminating a given gland of internal secretion, the addition of therapeutic resource directed to that gland is clearly indicated.

CONCLUSIONS

A series of cases carefully studied by me leads me to the conclusion that every case must be judged upon its own merits and the indications present. A great deal of good may be accomplished in these cases, which is of real value, and the psychic element can be entirely eliminated in many instances. It must, of course, be kept in mind that the results are not uniformly good and patients must be subjected to therapy of one type or another to meet the symptoms for which they apply for relief. The justification of the gynecologist and urologist for submitting their female patients for the relief of the untoward manifestations of the climacteric to various forms of therapy holds good in the male. Thus far this field has been sadly neglected and offers much for the class of patients who travel from consultation chamber to consultation chamber and finally fall into the hands of quacks or faith healers with ultimate and often untimely destruction, when in well selected instances the physician can accomplish a great deal by the suggestions as to therapy given in this paper.

The author's references will appear in his reprints.

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Changes in the Mechanism of the Human Heart Preceding and During Death

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The observations in this study are based on six patients in whom almost continuous electrocardiographic records were obtained from ten minutes to seven hours and thirty-two minutes preceding death. Opinion has been rife with regard to the final mechanism of the heart at death, but actual proof has been meagre. It is generally conceded that ventricular fibrillation is incompatible with life, the evidence for this arising from the experimental data of numerous observers which has led to the belief that this disturbance in cardiac action is usually the terminal mechanism in the death of human beings. Instances of recovery from ventricular fibrillation in cats (3) and dogs (4) have been reported, as well as temporary recovery in man (6, 7).

Robinson, in 1912, published a study similar to this in which electrocardiographic observations were made on seven patients dying of acute infectious disease. He found that in four of his patients activity of the ventricles was evident one and one half to eighteen minutes after auricular activity had ceased, and in two activity of the auricles outlasted that of the ventricles. Complete heart block occurred in three instances, while slight delay in conduction was observed in five. In two instances auricular activity ceased before evidence of impaired conduction appeared. Marked slowing in rate was noted constantly; the slowest independent ventricular rates varied from 13.6 to 47 each minute and the slowest recorded regular auricular rates varied from 20 to 65 each minute. Ventricular fibrillation occurred in only two cases and in one of these, normal rhythm was temporarily reestablished. A constant finding was the eventual fusion of the R and the T wave, giving rise to a large rounded or a peaked wave. There was no instance of auricular fibrillation in Robinson's cases. A very interesting observation was the fact that evidence of cardiac activity was registered by the electrocardiograph from six to thirty-five minutes after all the usual clinical signs of death had occurred. This observation has been confirmed by Einthoven and Hugenholtz, who found during the course of animal experiments that the electrocardiogram continued after the recording index had ceased to register muscular activity.

Greene and myself in the Mayo Clinic, in experimental work not yet published, studied the mechanism of death in the dog's heart. The animal was anesthetized by ether, using the intratracheal insufflation method. Electrodes were applied to the right foreleg and the left hind leg to obtain the electrocardiograms in Derivation II. The heart was exposed by a sweeping intercostal incision, and the wound spread by retractors, giving a large unobstructed field. After obtaining a control electrocardiogram, all the vessels leading to and from the heart were simultaneously and completely clamped, and continuous electrocardiograms obtained until all signs of cardiac activity had ceased.

In all instances a progressive slowing in cardiac rate was noted, ventricular activity outlasting that of the auricle in every case. The various types of nodal rhythm occurred and, as slowing became more marked, sinoauricular block, delayed auriculoventricular conduction, and complete heart block appeared. Extreme degrees of complete heart block were noted; in one animal a strip of tracing revealed forty-five auricular waves to one of the ventricle. The stage of block was invariably followed by the fusion of the R and the T waves, resulting in a peculiar, distorted wave of rather high amplitude. The rate during these latter phenomena was extremely slow, often only twelve complexes during the minute and, after a variable period of time, all evidence of cardiac activity ceased. Ventricular fibrillation was frequently observed. The same experiments were repeated with the vagi divided, as they lay in the carotid sheath. This procedure was not followed by the appearance of nodal rhythm, nor did the preliminary stages of heart block appear.

Similar observations were made by Greene and Gilbert, working on dogs in whom they studied the behavior of the blood pressure and the electrocardiogram during extreme oxygen want. After sec-

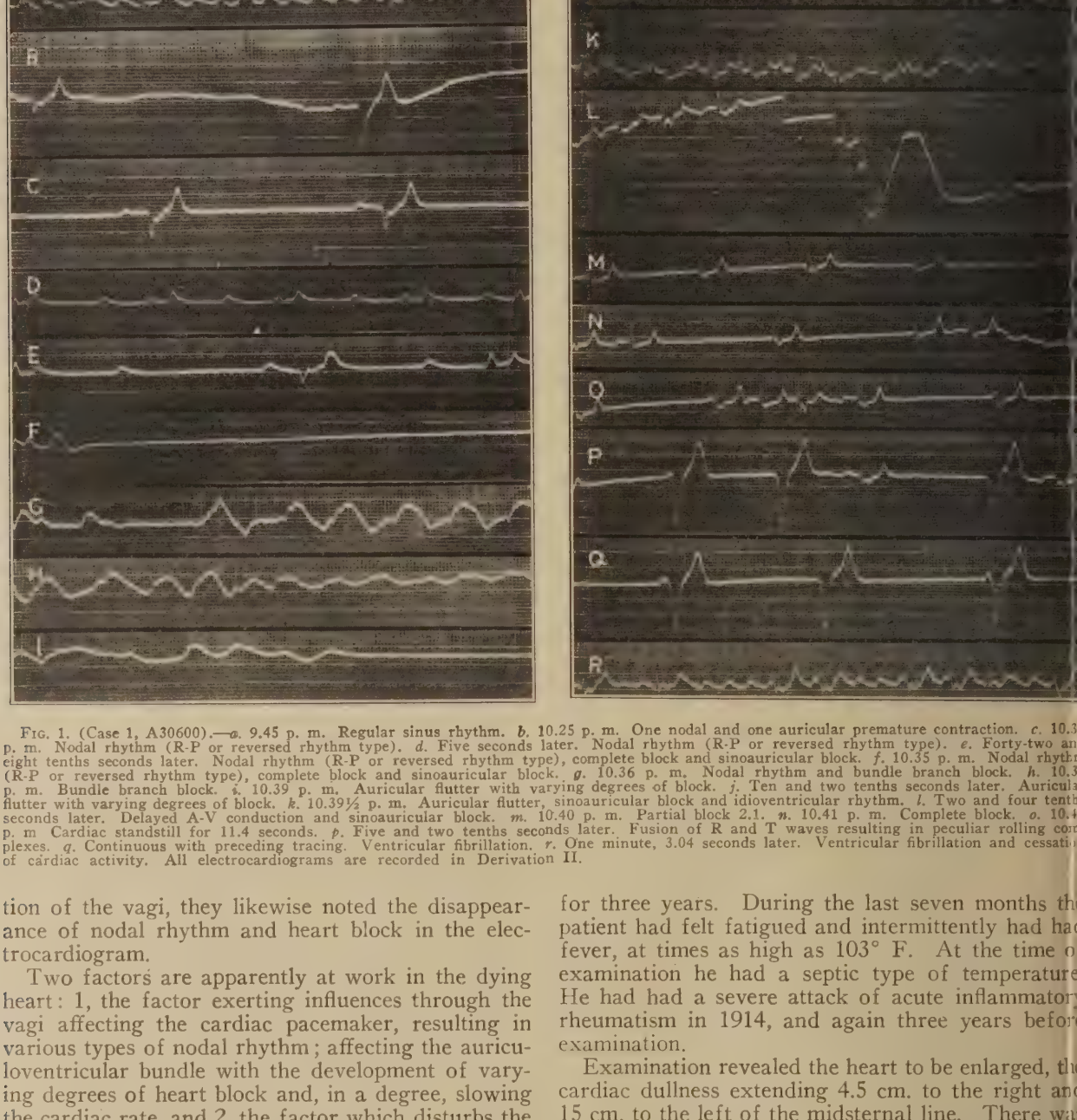

Fig. 1. (Case 1, A30600).—*a*. 9.45 p. m. Regular sinus rhythm. *b*. 10.25 p. m. One nodal and one auricular premature contraction. *c*. 10.3 p. m. Nodal rhythm (R-P or reversed rhythm type). *d*. Five seconds later. Nodal rhythm (R-P or reversed rhythm type). *e*. Forty-two an eight tenths seconds later. Nodal rhythm (R-P or reversed rhythm type), complete block and sinoauricular block. *f*. 10.35 p. m. Nodal rhyth (R-P or reversed rhythm type), complete block and sinoauricular block. *g*. 10.36 p. m. Nodal rhythm and bundle branch block. *h*. 10.3 p. m. Bundle branch block. *i*. 10.39 p. m. Auricular flutter with varying degrees of block. *j*. Ten and two tenths seconds later. Auricul flutter with varying degrees of block. *k*. 10.39½ p. m. Auricular flutter, sinoauricular block and idioventricular rhythm. *l*. Two and four tent seconds later. Delayed A-V conduction and sinoauricular block. *m*. 10.40 p. m. Partial block 2.1. *n*. 10.41 p. m. Complete block. *o*. 10.4 p. m Cardiac standstill for 11.4 seconds. *p*. Five and two tenths seconds later. Fusion of R and T waves resulting in peculiar rolling com plexes. *q*. Continuous with preceding tracing. Ventricular fibrillation. *r*. One minute, 3.04 seconds later. Ventricular fibrillation and cessati of cardiac activity. All electrocardiograms are recorded in Derivation II.

tion of the vagi, they likewise noted the disappearance of nodal rhythm and heart block in the electrocardiogram.

Two factors are apparently at work in the dying heart: 1, the factor exerting influences through the vagi affecting the cardiac pacemaker, resulting in various types of nodal rhythm; affecting the auriculoventricular bundle with the development of varying degrees of heart block and, in a degree, slowing the cardiac rate, and 2, the factor which disturbs the inherent automatism and fundamental coordination of the heart, as evidenced by high degrees of heart block, cessation of auricular activity, periods of complete cardiac standstill, and the fusion of the ventricular components.

It is probable that the extreme oxygen want accompanying cardiac asphyxia is capable of producing marked stimulation of the vagi, giving rise to the disturbances of the cardiac pacemaker and of the auriculoventricular bundle. As the processes of death progress, the inherent activity of the heart is affected, and the final ventricular events appear as already described.

CLINICAL CASES ILLUSTRATIVE OF THE MECHANISM OF DEATH IN THE HUMAN HEART

Case I (A30600).—A man, aged fifty-eight years, had had dyspnea and palpitation following exercise for three years. During the last seven months th patient had felt fatigued and intermittently had ha fever, at times as high as 103° F. At the time o examination he had a septic type of temperature He had had a severe attack of acute inflammator rheumatism in 1914, and again three years befor examination.

Examination revealed the heart to be enlarged, th cardiac dullness extending 4.5 cm. to the right an 15 cm. to the left of the midsternal line. There wa no arrhythmia, but a loud blowing systolic murmu was audible at the apex, transmitted into the axill and heard through to the back. The edge of th liver was palpable four cm. under the right costa margin, and the spleen was just palpable. The sys tolic blood pressure ranged from 156 to 162, and th diastolic was 78. The pulse ranged from 100 t 110. Blood culture studies revealed the presenc of the Streptococcus viridans. Hemoglobin was 4 per cent. erythrocytes numbered 2,210,000, an leucocytes 6,200. Repeated urinalyses revealed small amount of albumin, occasionally a few hyali casts, and erythrocytes. The combined phenolsul phonephthalein test varied from five per cent. to te per cent. There were 124 mg. of urea in each 10 c. c. of blood. The electrocardiogram revealed noda premature contractions.

A clinical diagnosis was made of subacute bac

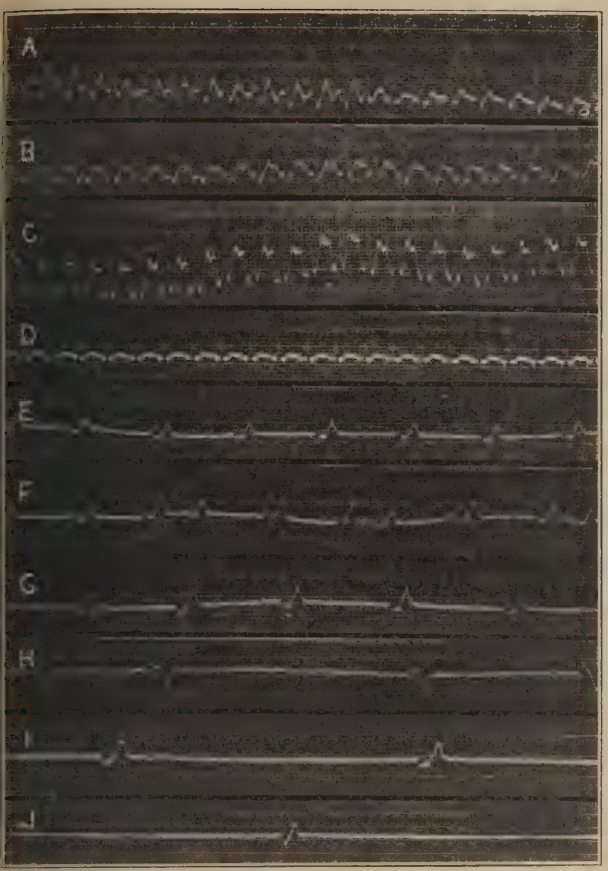

Fig. 2 (Case 2, A404109). *a.* 8.00 p. m. Auricular fibrillation. *b.* 9.22 p. m. Regular sinus rhythm. *c.* 10.30 p. m. Regular rhythm, high amplitude complexes. *d.* 10.35 p. m. Regular rhythm, low amplitude complexes. *e.* 12.35 a. m. Inception of nodal rhythm (P-Ro). *f.* Forty-one and four tenths seconds later. Migrating pacemaker and nodal premature contractions. *g.* 12.37 a. m. Migrating pacemaker. *h.* One second later. Complete block. *i.* Four and eight tenths seconds later. Complete block and cessation of auricular activity. *j.* Twenty-three and four tenths seconds later. Two ventricular complexes and cessation of cardiac activity.

erial mitral endocarditis (Streptococcus viridans), hronic nephritis, secondary anemia and peripheral rteriosclerosis. Six days before the patient died he uddenly became hemiplegic and sank into coma rom which he did not arouse.

Necropsy revealed chronic endocarditis of the itral valve and right auricle with acute vegetative xacerbation. There was considerable hypertrophy nd dilatation of the myocardium with fatty changes. he kidneys revealed chronic diffuse nephritis with yelitis. There was a splenic infarct, an advanced egree of arteriosclerosis, and a terminal broncho-neumonia.

Analysis of electrocardiogram.—The first records f the series were obtained at 9:45 p. m., when death ppeared imminent. The rhythm was of sinus origin ith a moderate degree of tachycardia, 110 each inute (Table 1, Fig. 1a). No appreciable change as noted forty minutes later (Fig. 1b). Six min-tes later, however, a marked slowing in the heart ite was noted, varying from 86 to 37 each minute, ith the development of nodal rhythm (R-P on re-ersed rhythm type). The P wave which, prior to is, had been positive, became negative and of lower nplitude (Fig. 1c). This mechanism remained un-tered until 47.8 seconds later, when periods of omplete block and sinoauricular block appeared. The P wave remained negative (Fig. 1e). One minute later the onset of bundle branch block was noted, the QRS complexes, suddenly broadening out from 0.03 to 0.16 seconds, were negative, and of increased amplitude. At this point auricular activity could not be identified with certainty (Fig. 1g). Bundle branch block persisted for about three minutes and was succeeded by auricular flutter with varying degrees of block (Fig. 1i). One half minute later the flutter was replaced by sinoauricular block followed again by idioventricular rhythm (Fig. 1j). After 2.4 seconds delayed A-V conduction was noted (0.24 second) and sinoauricular block again appeared (Fig. 1k). About one half minute later 2:1 block occurred (Fig. 1l), followed in one minute by complete block (Fig. 1m). One minute later no sign of cardiac activity was evident for 11.4 seconds (Fig. 1n). After 5.4 seconds fusion of the R and T waves occurred resulting in large, peculiar, rolling complexes (Fig. 1o), followed immediately by a period of ventricular fibrillation and then complete cessation of all signs of cardiac activity (Fig. 1p). Auricular activity ceased two and one half minutes before that of the ventricles. The slowest recorded ventricular rate was 21, while the slowest auricular rate was 22 each minute.

Case II (A404109).—A man, aged forty-three years, complained of dyspnea, palpitation, tachycardia, progressive weakness, and loss of weight of six months' duration. He was extremely nervous and irritable, and at the time of his admission to the hospital was very emotional.

Examination revealed marked emaciation, marked tremor of the hands, warm, moist skin, and profound

Fig. 3 (Case 3, A406471), *a.* 10.08½ a. m. Auricular fibrillation with complete heart block. *b.* 10.09½ a. m. Cessation of cardiac activity for 11.4 seconds. *c.* 10.10½ a. m. Cessation of cardiac activity. *d.* 10.12 a. m. One bizarre ventricular complex. *e.* 10.13 a. m. Cessation of cardiac activity. *f.* 10.18 a. m. Ventricular fibrillation. *g.* Few seconds later. Cessation of cardiac activity.

Time	Rate: Ventricle	Rate: Auricle	Conduction time (seconds): R-R	P-R	QRS	S-T	T	Wave amplitude (10^{-4}) (Voltage): P	Q	R	S	T	Remarks
9:45 p.m.	110	110	0.54 to 0.56	0.19	0.06	0.27	0.12	1.0	0.0	9.5	-1.5	3.5	Sinus tachycardia
10:25 p.m.	115	115	0.52	0.20	0.05	0.27	0.13	4.0	0.0	7.0 to 7.5	-2.5	4.0	One nodal and one auricular premature contraction
10:31 p.m.	86 37	86 ?	0.52 to 1.40	0.0	0.05	0.33	0.20	-2.5	0.0	6.5 to 7.5	-1.0 to -1.5	4.5	Nodal rhythm (R-P or reversed rhythm type)
5 seconds after preceding	46	46	1.29	0.0	0.04	0.33	0.17	-2.25	0.0	5.0	-2.0	4.5	Nodal rhythm (R-P or reversed rhythm type)
42.8 seconds after preceding	75 to 30	150 to 30	0.68 to 1.76	0.0 to 0.21	0.03 to 0.04	0.34	0.17	-2.5	0.0	4.0 to 7.5	0.0 to -1.5	4.5 to 6.0	Nodal rhythm (R-P or reversed rhythm type). Complete block and sino-auricular block
10:35 p.m.	100 to 30	120 to 33	0.46 to 1.76	0.0 to 0.21	0.03 to 0.04	0.32	0.13	-2.5	0.0	4.5 to 6.0	-1.0 to -3.0	5.0 to 6.5	Nodal rhythm, complete block and sino-auricular block
10:36 p.m.	45	?	0.97 to 1.52	0.0 to 0.22	0.03 to 0.16	0.32	0.13 to 0.32	2.0 to -2.5	0.0	4.0 to 17.0	0.0 to -1.75	5.0 to 12.5	Nodal rhythm and idioventricular rhythm
10:38 p.m.	28	?	1.86 to 2.08	0.0 to 0.12	0.16	0.32	0.32	0.0 to 3.0	0.0	-17.0	0.0	12.0	Idioventricular rhythm
10:39 p.m.	66	216	Variable	Variable	0.04	Variable	0.18	Variable	0.0	5.5 to 7.0	-1.0 to -2.5	6.5	Auricular flutter with varying degrees of block
10.2 seconds after preceding	43	200	Variable	Variable	0.04	0.39	0.19	Variable	0.0	5.0 to 6.5	-1.0 to -3.0	4.75 to 7.0	Auricular flutter with varying degrees of block
10:39⅘ p.m.	21	?	1.44 to 3.56	? to 0.28	0.03 to 0.13	0.34	0.34	-2.25 to 2.0	0.0	3.25 to -12.0	0.0 to -2.5	5.0 to 8.0	Auricular flutter, sino-auricular block, and idioventricular rhythm
2.4 seconds after preceding	22	22	2.36 to 2.76	0.24	0.06 to 0.13	0.35	0.17	2.5	0.0	-6.0 to -12.0	0.0	8.0 to 8.75	Delayed A-V conduction, sino-auricular block
10:40 p.m.	37	74	1.40 to 1.72	Variable	0.05	0.37	0.15	2.5 to 3.5	0.0	3.25	0.0	4.0	Partial block (2:1)
10:41 p.m.	21	48	2.08 to 3.42	Variable	0.08 to 0.10	Variable	Variable	2.75 to 3.0	0.0	-4.25 to 5.0	0.0	3.75 to 4.75	Complete block
10:42 p.m.													Cardiac standstill for 11.4 sec
5.2 seconds after preceding			0.52 to 0.68										Fusion of R and T waves. Peculiar rolling complexes
Continuous with preceding													Ventricular fibrillation
1 minute and 3.04 seconds after preceding													Ventricular fibrillation and cessation of cardiac activity

TABLE 1.—Detailed analysis of electrocardiograms in Case I, A30600.

quadriceps weakness. There was a slight degree of exophthalmos. The thyroid was slightly, but diffusely, enlarged, of granular consistency, and thrills and bruits were present at all thyroid poles. The heart was slightly enlarged, the cardiac dullness extending 4 cm. to the right and 13 cm. to the left of the midsternal line. A blowing systolic murmur was audible at the apex, not transmitted. A total arrhythmia was present. The cystolic blood pressure was 158, the diastolic 84, and the pulse rate 120. Urinalysis revealed only a faint trace of albumin. The hemoglobin was 65 per cent., erythrocytes numbered 3,780,000, and leucocytes 4,400. The basal metabolic rate was +72 per cent. The clinical diagnosis was severe exophthalmic goitre. The patient became progressively worse and died of acute hyperthyroidism two weeks after admission.

Necropsy revealed bronchopneumonia of the right lung, marked dehydration of all tissues, old healed pulmonary tuberculosis, and pleuritis.

Analysis of electrocardiograms.—The preleth records were begun at 8 p. m., and the initial tra ing revealed an extremely rapid auricular fibrillatio 222 each minute (Table 2, Fig. 2a). One hour an twenty-two minutes later the rhythm was regula and of sinus origin, the rate being 192 (Fig. 2b

Time	Rate: Ventricle	Rate: Auricle	Conduction time (seconds): R-R	P-R	QRS	S-T	T	Wave amplitude (10^{-4}) (Voltage): P	Q	R	S	T	Remarks
8:00 p.m.	222		Variable	0.0	0.05	0.16	0.16	0.0	0.0	11.5 to 14.0	0.0 to -3.5	4.25 to 7.00	Auricular fibrillation
9:22 p.m.	192	192	0.31	0.13	0.05	0.12	0.12	4.0	0.0	12.0	-1.0	6.0	Regular sinus rhythm
10:30 p.m.	200	200	0.29	0.11	0.10	0.10	0.10	9.0	0.0	20.0	00.0	10.5	Regular rhythm, high amplitude
10:35 p.m.	200	200	0.29	0.11	0.05	0.13	0.13	2.0	0.0	5.0	0.0	2.25	Regular rhythm, low amplitude
12:35 a.m.	72	?	0.83	0.0	0.03	0.19	0.12	?	0.0	9,0	0.0	5.0	Inception of nodal rhythm (P-R
41.4 seconds after preceding	83	?	Variable	Variable	0.03 to 0.05	0.19	0.14 to 0.19	0.0 to 2.25	0.0	4.5 to 8,0	0.0 to -6.5	6.0 to 7.0	Migrating pacemaker with nodal premature contractions
12:37 a.m.	56	?	1.08 to 1.22	Variable	0.03	0.20	0.15	? to -2.0	0.0	8.0	-1.25	6.0	Migrating pacemaker
1 second after preceding	30	60	1.28 to 2.73	Variable	0.03	0.24	0.16	-2.5	0.0	6.5	-1.25	7.0	Complete block
4.8 seconds after preceding	28	?	1.71 to 3.08	0.0 to variable	0.03	0.24	0.16	0.0 to -2.5	0.0	6.75	-1.75	5.5	Complete block and cessation of auricular activity
23.4 seconds after preceding	14	0											Two ventricular complexes and cessation of cardiac activity

TABLE 2.—Detailed analysis of electrocardiograms in Case II, A404109.

Time	Rate: Ventricle	Rate: Auricle	Conduction time (seconds): R-R	P-R	QRS	S-T	T	Wave amplitude (10^{-4}) (Voltage): P	Q	R	S	T	Remarks
10:08½ a.m.	19		Variable	0.0	0.07	?	?	0.0	0.0	5.5 to 6.0	-2.5	?	Auricular fibrillation with complete block
10:09½ a.m.													Cessation of cardiac activity for 11.4 seconds
10:10½ a.m.													Cessation of cardiac activity
10:12 a.m.													One bizarre ventricular complex
10:13 a.m.													Cessation of cardiac activity
10:18 a.m.													Ventricular fibrillation
Few seconds after preceding													Cessation of cardiac activity

TABLE 3.—Detailed analysis of electrocardiograms in Case III, A406471.

One hour and eight minutes later the rate was 200, the rhythm regular, but all complexes had much greater amplitude (Fig. 2c). After two hours and five minutes, the heart rate suddenly slowed to 72 each minute, with the inception of nodal rhythm (disappearance of P wave) (Fig. 2e). The next record, taken 41.4 seconds later, revealed a migrating pacemaker, the relationship of the P to the R wave constantly shifting (Fig. 2f). About one minute later complete block supervened (Fig. 2h) and 4.8 seconds later there was no evidence of auricular activity (Fig. 2i). The record taken 23.4 seconds later revealed only two ventricular complexes followed by cessation of all cardiac activity. The auricles ceased to show evidence of activity 28.2 seconds before the ventricles. The slowest recorded ventricular rate was 14, while the slowest auricular rate that could be determined was 60 beats each minute.

CASE III (A406471).—A woman, aged twenty-nine years, was admitted to the hospital suffering severely from cardiac decompensation. Ten years before, she began to have shortness of breath and palpitation on exertion, and occasionally swelling of the ankles and legs. During the last year her condition became progressively worse and she was admitted to the hospital in a critical condition.

On examination the patient was found to be very sick, markedly dyspneic, with quite profound cyanosis and marked edema of the lower extremities. The cardiac dullness extended five cm. to the right and fourteen cm. to the left of the midsternal line. Total arrhythmia was present. Loud blowing to and fro murmurs were heard over the cardiac area, and the systolic murmur was transmitted into the axilla. A pulse deficit of 110 beats each minute was recorded. Examination of the lungs revealed many moist râles. The liver extended down to the level of the umbilicus. The systolic blood pressure was 116, and the diastolic 90. The electrocardiogram showed auricular fibrillation and preponderance of the right ventricle. A clinical diagnosis was made of chronic mitral endocarditis with stenosis and regurgitation, chronic myocarditis with auricular fibrillation, and passive congestion of the viscera.

Necropsy revealed chronic endocarditis of the mitral valve with considerable narrowing of the ring, and hypertrophy and dilatation of the myocardium (300 gm.). There was a terminal thrombosis of the left auricle. The liver weighed 1,150 gm. and showed marked evidence of cirrhosis. An infarct of the right kidney and terminal bronchopneumonia were also noted.

Analysis of electrocardiograms.—This patient died rather suddenly, and therefore records over a prolonged period were not available. The first tracing taken at 10:08½ a. m., revealed auricular fibrillation with complete block (Table 3, Fig. 3a). One minute later complete cessation of cardiac activity occurred and lasted for 11.4 seconds (Fig. 3b). Following this there were occasional signs of ventricular activity (Fig. 3c, d, e), followed by a brief period of ventricular fibrillation (Fig. 3f), nine and one half minutes after our observations were begun. The slowest sequential ventricular rate recorded was

Time	Rate: Ventricle	Rate: Auricle	Conduction time (Seconds): R-R	P-R	QRS	S-T	T	Wave amplitude (10^{-4}) (Voltage): P	Q	R	S	T	Remarks
9:45 p.m.	190	190	0.32	0.12	0.03	0.16	0.16	3.75	0.0	5.0	-1.0	2.5	Regular rhythm
1:00 a.m.	180	180	0.35	0.13	0.03	0.16	0.16	4.0	0.0	5.0	-1.0	4.0	One nodal premature contraction
0:40 a.m.	160	160	0.38	0.12	0.04	0.16	0.16	3.25	0.0	6.0	-1.0	+4.0	Regular rhythm
1 seconds after preceding	85		Variable	0.0	0.04	0.16	0.16	0.0	0.0	6.0	-1.5	±3.5	Nodal rhythm (P-Ro) with nodal premature contractions
ontinuous with preceding	53		Variable	0.0 to 0.16	0.04	0.16	0.16	0.0 to 2.5	0.0	6.5	-1.0	±3.5	Nodal rhythm, nodal premature contractions and sino-auricular block
ontinuous with preceding	30		Variable	0.0 to 0.22	0.04	0.16	0.16	0.0 to 2.25	0.0	6.5	-1.0	±3.0	Migrating pacemaker and cessation of auricular activity
ontinuous with preceding	41		1.34 to 1.46	0.0	0.04	0.16	0.16	0.0	0.0	7.0	-1.0	±3.25	Cessation of auricular activity
ontinuous with preceding													Short period of ventricular fibrillation and cessation of cardiac activity

TABLE 4.—Detailed analysis of electrocardiograms in Case IV, A410137.

nineteen beats each minute. Auricular activity ceased eight and a half minutes before ventricular.

Case IV.—(A410137). A woman, aged thirty-four years, was admitted to the hospital in delirium attending an acute crisis of exophthalmic goitre.

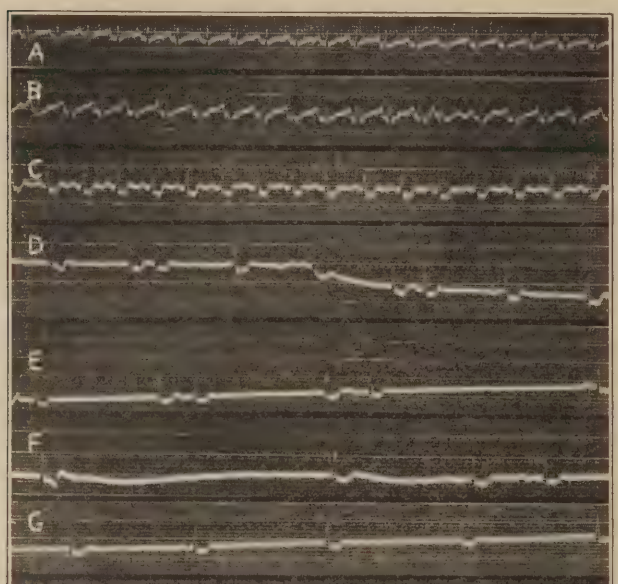

Fig. 4 (Case 4, A410137). *a.* 9.45 p. m. Regular sinus rhythm. *b.* 1.00 a. m. One nodal premature contraction. *c.* 10.40 a. m. Regular sinus rhythm. *d.* twenty-one seconds later. Nodal rhythm (P-Ro) and nodal premature contractions. *e.* Continuous with preceding tracing. Nodal rhythm, nodal premature contractions and sinoauricular block. *f.* Continuous with preceding tracing. Migrating pacemaker and cessation of auricular activity. *g.* Continuous with preceding tracing. Cessation of auricular activity. *h.* Continuous with preceding tracing. Short period of ventricular fibrillation and cessation of cardiac activity.

She had been perfectly well until four months before.

Examination was difficult, owing to the patient's extreme restlessness. There was a slight degree of exophthalmos, the thyroid was slightly enlarged and firm, and loud bruits were audible over the poles. The size of the heart could not be determined with any degree of certainty, the rhythm was regular, and no murmurs were audible. The systolic blood pressure was 140, the diastolic 56, and the pulse rate 120. The basal metabolic rate could not be determined, owing to the patient's extremely serious condition. A clinical diagnosis of acute crisis of exophthalmic goitre was made.

Necropsy revealed moderate dilatation of the left ventricle with slight fatty changes in the myocardium. The lungs showed acute emphysema; generalized congestion and persistence of thymus gland.

Analysis of electrocardiograms.—The first record obtained was at 9:45 p.m., and showed a rapid regular sinus rhythm, the rate being 190 each minute (Table 4, Fig. 4a). At 1:00 a. m., the rate was still rapid, 180, and the regular rhythm was occasionally interrupted by nodal premature contractions (Fig. 4b). No appreciable change was noted until 10:40 a.m., when the rate suddenly slowed to 85 beats each minute with the inception of nodal rhythm (P-R-o), and nodal premature contractions were present (Fig. 4d). Almost immediately the rate slowed further to 53, with the advent of sinoauricular block (Fig. 4e) and immediately migration of the pacemaker was evident (Fig. 4f). Auricular activity then ceased (Fig. 4g), followed by a short period of ventricular fibrillation, and then no evidence of further cardiac activity was noted (Fig. 4h). Auricular activity ceased 14.8 seconds before that of the ventricles. The slowest recorded sequential auricular rate was 150, while the slowest regular ventricular rate was 40.[1]

SUMMARY OF ELECTROCARDIOGRAPHIC FINDINGS

In every instance auricular activity ceased before that of the ventricles; the shortest duration was fourteen and eight tenths seconds, the longest eight and one half minutes. The slowest recorded sequential auricular rate was 22, while the slowest ventricular rate was 14 (Table 5). Two patients at the beginning of the graphic studies had auricular fibrillation, but this disorder of cardiac mechanism did not occur as an intercurrent event. Nodal rhythm occurred in five cases; there were two instances of the reversed rhythm type, two instances of simultaneous contraction of auricles and ventricles (P-R-o), and one of diminished P-R interval associated with the P-R-o type. Three instances of complete heart block were noted, while sinoauricular block occurred twice, and delayed auricuoventricular conduction and partial heart block once. One patient exhibited a period of auricular flutter with varying degrees of heart block. In two cases, periods of pacemaker migration were present. There were two examples of the bizarre complexes of idioventricular rhythm. In three cases long periods of complete cessation of cardiac activity occurred, 9.4 seconds 9.4 seconds and 11.4 seconds respectively. Ventricular fibrillation occurred in four cases, being the terminal mechanism in three. Fusion of the R and the T waves was noted in three cases.

The changes occurring in the mechanism of the human heart preceding and during death are variable

Disorder of cardiac mechanism	Robinson's series	Willius' series
Cases	7	6
Ventricular activity outlasting that of the auricles	4	6
Auricular activity outlasting that of the ventricles	2	0
Auricular fibrillation	0	2
Complete heart block	3	3
Delay in conduction	5	2
Ventricular fibrillation	2	4
Fusion of R and T waves	7	3
Partial heart block		1
Sino-auricular block		2
Auricular flutter		1
Nodal rhythm		5
Migration of pacemaker		2
Idioventricular rhythm		2
Slowest ventricular rate	13.6	14
Slowest auricular rate	20	22

Table 5.—Comparative findings in series of Robinson and Willius

and probably result from vagal influences and from alterations in the inherent activity of the heart due to the influences accompanying death.

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[1]This study comprised two additional cases but lack of space prevented their publication.

The Appraisal of Heart Affections*

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INTRODUCTION

There is some method in my having chosen as a title The Appraisal of Heart Affections. A field so broad gives me, in football parlance, an opportunity to kick around all over the lot, without confining myself to punting away at murmurs and blood pressure estimates—subjects in which life insurance companies are adept goal kickers. If I can lead you far afield from such practiced gymnastics, I might have a chance at the ball myself.

HEART AFFECTIONS VERSUS HEART DISEASE

We are discussing heart affections—not heart disease. There would be no use in discussing the latter. The term heart disease implies actual structural change in heart tissue,—change in valvular or muscular structure, probably both, coexisting with those signs of circulatory failure which a defective heart muscle would naturally induce. Such signs of circulatory failure embrace shortness of breath, pulmonary edema, cough, anasarca, swollen ankles, pulse volume abnormalities, pulse rhythm irregularities, heart enlargement, chest pains, congestion of skin surface and congestion of any organ within the body, as well as defective functioning of any part that happens to be deprived of an adequate blood supply because the pump is defective. It is a familiar picture and a well nigh hopeless one.

THE BEGINNING OF HEART DISEASE

Such an advanced heart wreck would of course never be brought before a medical examiner. And yet the wreckage had its simple beginning. Heart disease does not develop in a day or in a week—even syphilis, the notorious destroyer of hearts, usually smoulders along, as far as cardiocirculatory signs are concerned, until twelve or fifteen years have elapsed following the initial lesion; then it bursts into a consuming flame. Ordinary infections that are less virulent might never wreck the heart, were it not that the burden is added to and the affected heart eventually dragged down to circulatory inefficiency by such simple loads as insufficient periods of convalescence, excessive physical demands, emotional strain, intercurrent infections, focal absorption, malnutrition, endocrine disturbances and the weight of advancing years. As heart disease has its simple beginning, there must be a period in its early development when the heart merely protests against a load: these protests are not evidence of heart disease,—they are only evidences of heart affections. The history is vague, the symptoms are indefinite, the physical signs are inconstant and it becomes a problem, from an insurance viewpoint, to properly appraise a heart so affected.

DEPLETION OF NORMAL HEART RESERVE

There is a reason for our difficulty in appraising early heart affections. The borderline between heart normality and heart abnormality is so finely drawn that one merges into another quite without contrast, much as sunset merges into twilight. If any one of you healthy men were to run rapidly around two or three blocks, in all probability you would return with a congested face, superficial veins engorged, breathing short and hurried, pulse rapid and low in volume, the precordial impulse diffuse, a precordial thrill probably present, the systolic pressure reading would certainly be over 150, the second sound at the aortic area would be sharply accented and ringing in character and the odds are that we would have no difficulty in agreeing upon a murmur being present in your heart. Of course you are a healthy person, and these signs would abate in from two to five minutes. But if they persisted, the borderline between heart health and a heart affection would have been crossed.

HEART FATIGUE SIMULATING HEART DISEASE

There is virtually no difference between the physiological heart and circulatory reactions which attend excessive, unaccustomed exercise, and pathological physical signs which often cause the rejection of an applicant. Both indicate a drain on the reserve power of the heart. Such distinction as is made is merely one of judgment; for in exercise, the immediate exciting cause is known and the physical signs are selflimited and abate promptly; in the rejected applicant, the exciting cause is unknown and the physical signs are more or less continuous as long as the cause remains active.

FINDING SUPPLEMENTING INDETERMINATE SIGNS

Surely the borderline between heart normality and heart abnormality is finely drawn. Physical signs have led us astray in the past. A medical publisher, whose life had been spent with physicians and who recently passed on in the fulness of years at seventy-six, delighted in exhibiting his astounding murmur to all who would listen—and when the face of the medical man began to grow serious, the old codger would relate how he was rejected forty-six years ago for life insurance by the master medical minds of that day. So we should seek for something to corroborate our cardiophysical findings if we are to appraise a heart affection judiciously. Fortunately, we can find this confirmatory testimony nowadays in a study of the previous history and in a study of the mechanism of the heart beat. Let us briefly consider a few salient points in history and later take some notice of mechanical derangements of the heart beat, as shown clinically by the irregular pulse and as registered by the heart itself in the graphic heart records which embellish the pages of our medical magazines.

PREVIOUS DISEASES THAT MAY IMPAIR HEART

History plays a large part in the present day appraisal of heart affections. The object in searching the history is to determine whether the individual has ever had any of those diseases which are definitely

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known to affect the heart; for the heart may have been damaged during the course of the infectious disease, and the damage may not be revealed until many years later, when some excessive physical demand or infection precipitates a cardiac break. Diphtheria, for example, affects the heart in twenty-two per cent. of the persons whom it attacks, and the presence of diphtheria in the history of a patient would make one feel that the infection had some connection with later day heart symptoms, no matter how much time had elapsed between the infection and the heart symptoms. While scarlet fever affects the heart in only five per cent. of the persons attacked, the well known relation between scarlet fever and nephritis, which ensues at a later date, would make one feel that some long standing kidney involvement could be throwing a load upon the heart. Influenza is so frequently attended by heart muscle involvement, especially when there has been an insufficient period of convalescence, that the term post-influenzal myocarditis has a dreaded place in the medical vocabulary of today. Pneumonia is believed to affect the heart in ten per cent., and typhoid fever produces heart derangements in two per cent., of the persons affected.

THE TONSILLAR TRIO

The tonsillar trio, consisting of chorea, acute rheumatic fever and tonsillitis, have almost a selective affinity for heart tissue and all three have a great deal of weight in the appraisal of heart affections. It is surprising that the medical questionnaires of life insurance companies do not all inquire specifically into a history of tonsillitis. Figures recently compiled by the New York Heart Association show that the removal of tonsils prevented the recurrence of rheumatic fever in seventy-six per cent. and that the removal of tonsils prevented the recurrence of chorea in fifty per cent. of children previously affected with these diseases. The health credit of a person who has had repeated attacks of tonsillitis certainly stands upon slippery ground, for the well known relation between tonsillitis and acute rheumatic fever, plus statistics showing that the heart is damaged in twenty per cent. of the cases of acute rheumatic fever, makes tonsillitis a disease to be taken well into account by medical examiners.

When the diseases above referred to appear in the previous history of a person whose heart health is being considered, it is wise to assume that a heart defect is probably present. Not until every method of cardiac examination has been exhausted should the heart be considered as normal and regarded as absolved from participation in those diseases which are definitely known to affect many hearts.

CONCERNING HEART ENLARGEMENT

There is a point or two which we might touch upon in connection with the physical examination of an applicant, in order to bring out the advantages and disadvantages of certain clinical practices. One of these concerns the evidence of heart enlargement. I am not going to indulge in the usual trite remark that percussion of the heart is liable to error and hence inaccurate. As a matter of fact, the size of the heart can be very nicely approximated by percussion in the majority of instances and by most doctors. A good method of ascertaining the total transverse diameter is to percuss in the fourth interspace for the right border, beginning far to the right and coming toward the midsternal line. If there is no change in the percussion note and no change in the sense of resistance as one approaches the right sternocostal junction, it can be assumed that the right border of the heart occupies a normal position at the sternocostal junction. The left border of the heart can be determined far more accurately than the right, provided one percusses in the fifth interspace and takes as the left border that point where there is a change in note and an increased sense of resistance, together with the actual feeling of the pulsating organ beneath this point. X ray examination proves that the left border of the normal heart is at that point at which one can farthest feel the precordial impulse. Adding together the right and left distances from the midsternal line gives us the total transverse diameter of the heart.

Unfortunately, there is no such thing as a normal width for a heart. A heart that is eleven centimetres in its transverse diameter may be construed as heart enlargement in a slender, narrow chested person, while a transverse diameter of fourteen centimetres may be quite proportionate for a broad chested, heavy set iron worker. So we determine heart enlargement only by employing our sense of comparison and by deciding whether the heart width, as marked on the chest, is in relative proportion to the size of the thorax and the build of the individual.

SOURCES OF ERROR IN CARDIAC PERCUSSION

In estimating whether a heart is enlarged or not, it should be borne in mind that a heart does not necessarily need to enlarge in the transverse diameter. It is possible for a heart to enlarge in the anterior-posterior plane, and in such instances cardiac percussion is of course deceiving. Furthermore, heart enlargement is not an absolutely indispensable part of the picture of heart damage. A heart does not necessarily need to be enlarged to be defective. Small hearts can produce profound circulatory disturbance, without giving any evidence of ever having been enlarged.

VALUE OF EXERCISE TESTS

An exercise test is of definite value in appraising the heart. While of course we all subscribe to the platitude that no test has yet been devised to estimate the functional capacity of the heart, the fact still remains that a heart is not normal when, after exercise, hurried breathing and a rapid rate persist for several minutes. I have found such persistence to be due to paroxysms of auricular flutter, to nodal rhythm and to the sudden onset of transient auricular fibrillation, all three of which are such serious evidences of myocardial involvement. Acceptance of the applicant should be withheld until a systemic search has resulted in the detection of a probable and remediable cause for the disturbance. The normal hearts of young adults of military age return to the preexercise rate, and the respiration returns to the preexercise rate, within two minutes following such effort as hopping one hundred times on one foot. It is also of value to know that hearts which fail to respond to exercise with an increase in rate, especially when the respiratory rate is increased, are generally found to be abnormal hearts. Usually this sign is found in

persons whose cardiac reserve is depleted by battling with long continued, low grade infections, such as absorption from septic foci: sometimes, however, the pulse rate fails to respond to exercise for the reason that heart block is present.

SIGNIFICANCE OF THE ABNORMAL PULSE

From what has already been said, it is apparent that tachycardia in some instances is a physiological response of a well balanced heart to a stimulus; in other instances, tachycardia may mean that a toxic or degenerated area in heart tissue has assumed control of the heart rate.

In like manner, there are several other pulse abnormalities, some of which we know are totally without significance as far as cardiac pathology is concerned,—witness the irregularities called sinus arrhythmia and sinoauricular block. On the other hand, we encounter irregularities that are part or parcel of the picture of myocarditis,—such as auricular flutter, auricular fibrillation, heart block and ventricular alternation.

It is to the recently introduced methods of graphic heart examination that we owe our ability to differentiate the simpler pulse abnormalities from those of serious import. Furthermore, modern cardiology has elaborated a series of signs by which we can recognize the various types of intermittent pulse during clinical examination, without necessarily resorting to graphic heart study of every patient.

CONCLUSION

We will reserve for another occasion the consideration of the irregular pulse and the clinical value of graphic heart records. In closing, it may be said that the day is coming when life insurance companies, instead of rejecting applicants who exhibit heart irregularities, will accept certain applicants when the innocent nature of their irregularity is attested by graphic heart records which accompany the application. In addition to preventing the economic losses of the past, such records would be a definite protection, not only for the examining physician but also for the Chief Examiner's Office.

SUMMARY

The appraisal of heart affections can be rendered more accurate by applying the following points to the consideration of the case:—

1. A heart can be affected without necessarily being structurally diseased.
2. The reserve power of the heart can be exhausted in health or in disease, and in either circumstance the symptoms and signs bear a resemblance to each other.
3. Physical signs of heart affections should be supplemented by a search of the history and by cardiographic records before the heart is definitely condemned.
4. Tonsillar infectivity plays an important rôle in the production of heart affections.
5. Heart enlargement is not an indispensable part of the picture of heart disease. Small hearts can manifest profound symptoms of heart disturbance.
6. A heart is not normal when, after an exercise test, hurried breathing and a rapid rate persist for several minutes.
7. There are certain pulse irregularities that are not an evidence of heart disease, and graphic records that establish the physiological character of such irregularities are additional warrant for the acceptance of the applicant for insurance.
8. It is possible, by written heart records, to detect heart affections that cannot be recognized by any other means of examination. Thus electrocardiography is of importance in any life insurance or other examination in which a knowledge of the physical fitness of the individual is of first consideration.

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Physiotherapy in Cardiovascular Disease

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The subject of the treatment of disorders of the cardiovascular system by reeducation and physical methods is possessed of an importance which amply merits due appreciation by all who would endeavor to employ rational methods for the cure of circulatory derangements. During recent years advances of an important character have become developed which not only broaden our therapeutic limits, but incidentally prove that treatment may be entirely efficient in certain cases, without the intervention of drugs or medicinal aids of any kind.

An attempt to determine the particular types of heart condition suitable for treatment by physical methods, also the selection of an appropriate scheme for application in individual cases, will require thoughtful discrimination. At the same time it is satisfactory to reflect that our scope tends gradually to enlarge, and it is becoming increasingly patent that physiotherapy merits full consideration whenever we may be called upon to outline a scheme of treatment for some form of cardiovascular disorder.

The space at my disposal being strictly limited I do not propose to discuss the fundamental principles which guide our deliberations and assist our endeavors towards a remedial objective, but briefly to summarize certain of the types of condition which exemplify the results of physical therapy to the best advantage.

A vast amount of studying during recent years has been centred upon D. A. H., the effort syndrome of Lewis, and it is to this variety of cardiac debility that I would first allude. Many striking peculiarities serve to distinguish the condition, its symptoms and physical signs are clearly defined,

structural disease does not obtain, and the deficient response to effort may be taken to indicate impairment of neuromuscular control which, by reason of its profound implication, determines the exaggerated cardiovascular manifestations which typify the complaint.

During the progress of the recent war opportunities were presented for the study of D. A. H. upon a comparatively large scale; the etiology of the condition, which need not here detain us, embraced a large variety of widely differing causes, the treatment, moreover, which I propose to epitomize, was moderately uniform.

From the onset it became obvious that active methods and physical reeducation should be adopted as early as possible after the establishment of definite convalescence; graduated exercises were regarded as the backbone of the treatment. These were performed under the guidance of skilled and expert instructors, and supervised by a medical officer, who, being thoroughly versed in the detail and technic of the drill from the practical point of view, fully appreciated the effects of the individual exercises, also the difficulties, apparent or real, which the patients might from time to time experience.

It is unnecessary in the present context to set out in detail a list of the exercises which comprised the program of the classes; suffice it to say they were selected with care to include an extensive variety of simple movements of limbs and trunk in combination with breathing exercises and short intervals of rest; incidentally, to avoid monotony, certain games were introduced into the daily physical training table, the value of these latter depending not only upon the competitive stimulus which they inculcate but also upon the development of an improved coordination of brain and muscle response.

Improvement was carefully watched for by routine examinations of the objective phenomena, cardiovascular, respiratory and others, following the prescribed exercises, and an improved tolerance of the latter was considered sufficient indication for progress to the advanced grades of effort, and for the route marches of graded severity which supplemented the later stages of the course of treatment.

The results following the adoption of graduated exercises for the cure of D. A. H. in soldiers were of so uniformly satisfactory a character that we may have no hesitation in advising a similar but modified scheme of physical therapy for the treatment of functional derangements of the cardiovascular system which so frequently complicate and prejudice the convalescence from certain of the simple diseases which affect the civil population. Moreover it is abundantly proved that the treatment of such cases of cardiac instability by rest alone will be fraught with disaster, further that it will require nothing more than an ordinarily wise discretion to decide when the opportune moment has arrived for the initiation of the first stages of the active treatment.

Our aim being to restore the normal healthy balance that presides over the circulatory adjustments which are refined to meet the demands of rest and effort, we shall need to scrutinize most carefully the tolerance of exercise as exhibited by the patient during the course of the treatment, in order that we may be supplied with the necessary data for the gradation of the movements and exercises which, from the reeducation point of view, are now so wisely adopted. Improvement may be judged to some extent by a diminution in the intensity of the symptoms, but it is customary in practice to place more reliance on physical signs, the objective phenomena portrayed by the circulatory, respiratory, and other symptoms, and the general features which may be observed to characterize the facial aspect of the patient at the cessation of the remedial exercise. With regard, moreover, to the specific effects upon the circulatory mechanism it rapidly becomes obvious that the general circulation is improved as a result largely of a definite increase in the amplitude of the heart's contraction, and that incidentally the coronary vessels are more efficiently supplied, the heart's contraction being strengthened thereby; its nutrition being raised, and the elimination of waste products, both locally in the cardiac muscle also in the system generally, proceeding with augmented vigor.

The second variety of case to which I shall briefly refer is that exemplified by the patient who suffers from cardiac disturbances, pain, palpitation, irregularities (more especially premature contractions), dyspnea, etc., in association with gastric maladies, deficient secretion, and asthenic states, dilatation of the organ, and deficiency of its peristaltic movements; in other words I find that patients whose cardiac phenomena depend upon reflex causes, gastric in origin, are admirably suited to treatment by physical methods; these latter I propose to outline. First however, it is necessary for a moment to consider certain clinical factors; a variety of symptoms produce sensations of physical incapacity in grades which differ materially from case to case. The more common include circulatory commotions such as irregular beating of the heart, stoppage and palpitation which as a rule occur in relation to meals, and are aggravated by persistent flatulent distention. In addition there is a tendency to nervous prostration, irritability, depression, insomnia and syncopal attacks. The physical signs embrace a somewhat motley collection of abnormalities; of these two only need concern us in the present context, viz., irregularity of heart action, and dilatation of the stomach; the latter in its gradual development becomes a focus of extreme irritability, whence stimuli persistently ascend, lowering the threshold of reflex cardiac excitation, and incidentally permitting the passage of abnormal impulses to the heart which disturb its rhythm, and interfere with its functional capacity to such an extent as to cause objective signs and symptoms of a particularly distressing nature.

The diagnosis being established by a correct judgment of gastric cause and cardiac effect, it obviously follows that lines of treatment need offer no special difficulty; complete rest in bed, with fluid restriction and a minimum of food will be essential in all cases. In addition, however, to the beneficial effects of rest and starvation much permanent relief will be obtained by the prescription of daily lavage and abdominal massage; the latter should follow the former each morning for the first ten days in the treatment of a case of average severity and be continued later as necessary. It is my practice to con-

bine with the massage passive exercises and depletive movements of the extremities daily, and to replace the former by resistance movements as soon as possible, watching the exercise tolerance with care during the whole progress of the treatment. During the second week the diet may be amplified in combination with the prescription of a bitter stomachic, acids, pepsin or such like remedy, and, the convalescent stage having been reached, it will only remain to instruct the patient how best he may complete his cure and avoid a recurrence of the malady in the future. Dietary restrictions, regularity of daily routine, habits and customs, also the question of smoking, will need to be carefully considered; special emphasis must, however, be accorded to the matter of daily exercise which should be selected to suit the requirements of each individual case, and will obviously vary considerably, the more elderly patients confining themselves to gentle walking games such as croquet, billiards, and others, with occasional courses of massage and movements, the more vigorous adopting forms of muscular effort which require a higher degree of physical endurance, viz., golf, tennis, shooting, swimming, climbing, horseback riding, and other sports, which all, in themselves, combine the advantages and good effects of general energetic massage.

The third group of cases which I have selected for mention includes those patients whose malady centres round an abnormally elevated range of blood pressure. A moment's consideration will suffice to remind us of the extensive etiology of this condition, further that in certain instances, for example patients with senile or decrescent arteriosclerosis, the blood pressure is frequently raised as a conservative measure, and to attempt a reduction would be both unnecessary and inadvisable. In the absence, however, of gross organic disease and degeneration, certain patients are afflicted with the commonly accepted symptoms of high blood pressure, cerebral, cardiac, and otherwise, the whole process depending upon some such factor as an increased viscidity of the blood, excessive friction, or the interference of vasomotor spasm and narrowing of the arterial bed.

This somewhat special type of disease, designated by Clifford Allbutt as hyperpiesis is peculiarly suited to treatment by physical methods combined with adequate rest, efficient purgation, venesection, and dietary restrictions which need not here detain us. According to the age of the patient, his previous mode of life, and general physiological makeup, we shall select an appropriate line of physical therapy, endeavoring at all times to ensure an improved circulation through the great muscular areas, whether it be by means of active exercise in some form, walking, games, hill climbing, or the more passive methods such as massage, movements passive or resistant, sweat baths or warm packs, and high frequency currents which in favorable cases, lower the peripheral resistance (incidentally therefore the blood pressure), assist in the dissipation of toxic substances, and reduce the degree of blood viscosity.

Myocarditis

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GENERAL CONSIDERATIONS

Myocarditis, both acute and chronic, is a much abused term. It is invoked whenever there are any symptoms or physical signs that might be interpreted as indicating myocardial weakness. Tachycardia, precordial pain and breathlessness following an acute infectious disease, signs and symptoms of an insufficient circulation in an older individual, weak or distant heart sounds, low blood pressure, are all too frequently attributed to myocarditis. It is not simply a stylistic purism to demand greater care and circumspection in the use of this term. A thorough understanding of the affections of the heart muscle requires a stricter definition, for words, incorrectly used, bring no clear concept to the mind. The term myocarditis should be confined to its etymological meaning, namely, an infection, acute or chronic, of the heart muscle. The other conditions which have been classified under this name should be assigned to different categories.

By far the most frequent type of myocarditis is that induced by the rheumatic virus. Next in frequency is chronic syphilitic inflammation of the heart muscle. Myocarditis may accompany or follow many of the acute infectious diseases, notably diphtheria, pneumonia, scarlet fever, typhoid and typhus fever and influenza. Rheumatic myocarditis is usually associated with endocarditis and pericarditis; syphilitic myocarditis with aortitis and disease of the aortic valve.

MYOCARDITIS

The diagnosis of myocarditis remains one of the most difficult problems in medicine, because of the fact that there are no pathognomonic signs of the disorder, and because the symptoms of disturbed muscular function are often obscured by accompanying signs dependent on disease of other parts of the circulatory apparatus.

Stokes (1) was probably the first to point out the physical signs indicating myocardial involvement in the course of acute infectious diseases. He described the weak first sound and the rapid pulse, and pointed out the grave significance of a change in rhythm or of embryocardia. He noted the flabbiness of the heart in these cases at postmortem. We may add to these signs dilatation of the heart and the appearance of gallop rhythm. A persistent fever, accompanied by a pulse rate more rapid than would be expected, is very suggestive, if no other cause for the fever can be discovered.

DIAGNOSIS

The diagnosis of myocarditis will rest in large part on the recognition of the nature of the underlying infection. If there are symptoms pointing to impairment of the heart muscle accompanying one of the rheumatic infections, diphtheria, or syphilis, the likelihood that the heart muscle shares in the general infection is very great. In the presence of the other infectious diseases, such as pneumonia, influenza, scarlet fever and typhoid fever, greater circumspection must be employed.

The most significant evidence of myocardial invasion is the appearance of an irregularity of the heart beat. This is not always easy to detect, but if carefully sought for, particularly with the employment of instrumental aids, such as the polygraph or electrocardiograph, will be found quite frequently. The arrhythmia may be caused by premature beats, by paroxysmal auricular fibrillation, or paroxysmal tachycardia. Partial heart block, which is particularly frequent in rheumatic fever and in diphtheria, can usually be recognized only in the graphic tracing by noting the prolonged auriculoventricular interval which normally does not exceed 0.2 seconds. Occasionally a dropped beat may be noted on auscultation, giving evidence of the complete blocking of an auricular impulse. Arborization block and bundle branch block are more uncommon manifestations. Syphilitic myocarditis too is often associated with some form of heart block.

In addition to the signs enumerated above, the patient usually presents signs of general infection, such as fever, prostration and leucocytosis. A rapidly appearing secondary anemia is seen with particular frequency in the rheumatic infections.

In those cases in which the course of the myocarditis is fulminating, as, for instance, in diphtheria, or, at times, in the rare cases of interstitial myocarditis, the patient may experience sudden extreme prostration or collapse, with vomiting. More often there are no definite localizing symptoms. An accompanying pericarditis or endocarditis may help in drawing attention to the heart, for both of these localizations are usually associated with myocardial involvement, particularly in the rheumatic cases. The congestive signs of heart failure, such as edema and hepatic enlargement, are not conspicuous in most cases of acute myocarditis.

VASOMOTOR DISORDERS

The circulatory insufficiency that accompanies the acute infectious diseases is due, by no means exclusively, to injury of the heart muscle by the bacterial toxins. Disordered function of the vasomotor centre, actual injury to the arteries and capillaries, or a disturbed nervous control of the heart, contribute largely to the symptoms of circulatory failure.

Naunyn (2) was among the first to point out that death in these patients is not always caused by failure of the heart, but that it may be conditioned by an atony of the bloodvessels due to a disordered vasomotor system. Romberg (3) and his students made an extensive experimental study of the circulatory failure in diphtheria and pneumonia, and were able to show that in many cases the heart remains functionally capable even after grave symptoms of circulatory failure have become manifest, provided the blood pressure is artificially elevated and an adequate amount of blood is returned to the heart from the periphery. They believe that the important and earliest injury is to the medullary vasomotor centre. With the fall in blood pressure the flow of blood through the coronary arteries becomes insufficient, and myocardial weakness, due both to the toxins of the disease and to poor nutrition of the heart muscle, sets in. MacCallum (4) has confirmed their work. Porter (5), on the other hand, has adduced evidence that the vasomotor centre is not impaired in diphtheria intoxication. That these disturbances may be caused by disordered function of the sympathetic ganglia is suggested by recent studies in which degenerative changes were found in the sympathetic ganglia of patients who had succumbed to acute infectious diseases (6). It is probable from more recent studies of capillary function that collapse and many of the graver circulatory disturbances accompanying the acute infections are due to injury and dilatation of the smallest arterioles and of the capillaries (7). This mechanism is similar to the one causing surgical shock.

NEUROCIRCULATORY ASTHENIA

Furthermore, the circulatory symptoms observed in convalescence from acute infectious disease are mainly due to malfunction of the peripheral vascular mechanism, possibly secondary to injury of some of the internal secretory glands, and are analogous in their character and origin to the symptoms of neurocirculatory asthenia. It has been pointed out elsewhere that in the majority of cases the disturbance is determined by a constitutional inadequacy of the circulatory apparatus and that intercurrent infections aggravate and bring to light symptoms that may have been minimal or latent (8). In other individuals who have been perfectly healthy, an acute infectious disease may be followed by the same symptoms. In these patients, however, in contrast to the constitutional type, the cardiovascular disorder usually clears up completely in from six months to two years.

The common cardiovascular symptoms following infectious diseases are palpitation, breathlessness, precordial pain, rapid heart beat, throbbing peripheral arteries and vasomotor disturbances, such as acrocyanosis. The subjective phenomena are usually in the foreground. In addition, the patient may present many other complaints, such as ready fatigability, nervousness, vertigo or fainting, sweating and insomnia. It becomes a matter of some moment to determine whether or not some persistent myocardial damage is responsible for the disordered circulation, or whether the cause lies in faulty cardiac innervation or vasomotor control, for in the former case, absolute bed rest is indicated and in the latter, careful physical reeducation. In the absence of cardiac irregularities, cyanosis of the lips, enlargement of the liver or edema, it may be assumed that within several weeks after the infectious disease the myocardium has been functionally restored, although it may not yet be capable of supporting excessive effort. The following case is a particularly severe one.

Case I.—During the epidemic of 1918, an American officer, aged twenty-four, was stricken with influenza, followed by a virulent bronchopneumonia,

which lasted about five weeks. He was greatly prostrated by his illness and during convalescence constantly complained of palpitation, precordial pain and inability to take a deep breath. His pulse rate while lying in bed was about 120. He perspired easily and had a definite tremor of the hands. He was kept at absolute rest for a month after the defervescence of the fever without any improvement in his symptoms. Except for the rapid pulse rate, there was no evidence of cardiac disease. He was then cautiously compelled to get out of bed and within one week was walking about freely. Although he felt stronger, he still complained of palpitation and breathlessness. For a year after that he was unable to undertake any severe effort and it was two years before he was restored to normal. During this whole period he gave no evidence of organic heart disease but presented all the earmarks of neurocirculatory asthenia.

The problem becomes still more difficult when a patient with existing organic heart disease is subjected to an acute infectious disease, although here too, with care, one can usually separate the symptoms of vasomotor instability and disturbed innervation from those due to myocardial weakness.

SUMMARY

To sum up, the diagnosis of myocarditis may be made only in the presence of one of the infections which is known to be associated with infection of the heart muscle, and when there are localizing signs such as cardiac dilatation or arrhythmia. Tachycardia, breathlessness, precordial pain, weak heart sounds and low blood pressure are of little diagnostic value in this connection. Very often these are caused by the vasomotor disturbances which so often follow acute infectious disease.

The term chronic myocarditis should be used only to describe a chronic infection of the heart muscle, such as syphilis, or very rarely, tuberculosis or actinomycosis. Myocardial degeneration consequent upon arteriosclerosis of the coronary arteries, or myocardial insufficiency following hypertension or pulmonary emphysema, are not inflammatory processes and should be sharply differentiated because their clinical course is quite different. The scarred heart muscle of a patient with long standing rheumatic heart disease is not a chronic myocarditis, but is the end result of previous attacks of acute or subacute myocarditis.

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Exercise from the Cardiovascular Viewpoint*

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Analyzing the life of the average man, who in an ambitious way pursues a business that binds him to an office chair, or to a great extent forces him into sedentary habits, we find the following: He is very apt to indulge in recreative exercise to such an extent that in a short space of time, either a hurried hour at some gymnasium, or, perhaps, during a week-end, he attempts to exert too much energy; to put too many muscles into play, and that these efforts are of decided harm to his cardiovascular apparatus. He suffers because of his business drive methods, which make his athletics an "energy drive."

The impression widely prevalent today is, that bodily exercise must entail bodily strain, as evidenced by breathlessness, pumping heart action, profuse perspiration, more or less fatigue, and most of the other signs of kinetic drive or overstrain. Frequently such activities have not only caused serious strain of the heart and bloodvessels, but often sudden death in the gymnasium or on the athletic field has proved the extent of the damage that injudicious exertion can produce. The question of the benefits or injuries of exercise has been studied by medical men from practically every angle during the last fifty years. It is only recently, however, that a definite status of this most interesting problem is being established (1-9).

Ling, of Sweden, was the first to work out a system of massage and exercise, with the view of perfecting such bodily deficiencies as were amenable to this form of treatment. Such names as Traube and Stokes stand in the pioneer field of those who ventured to supplement rest and medication in heart disease with exercise. Zander, of Stockholm, advocated the use of his apparatus, not only for joint and muscle deformities, but also for circulatory diseases. Oertel even recommended carefully graded and supervised mountain climbing for the restoration and reconditioning of the heart muscle, and in many cases showed brilliant results. The Schott brothers, in addition to regulated gymnastics, advocated carbonic acid baths. It will be seen, therefore, that the previously held dictum which condemned every patient with heart disease to a life of inactivity or even total invalidism has gradually been discarded.

There is now a better knowledge of the factors

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concerned in the maintenance of the circulation. Advances in the field of perfecting instrumental devices for studies of the mechanics and physics of cardiac activity, have added to the accuracy of study and observation. Blood pressure estimation, studies of the various phases of the cardiac cycle, rhythm interpretation, and a decidedly clearer understanding of the diseased heart with its abnormal functioning have made the problems clearer in a wide range.

The newer studies in cardiology have become almost universal in the last decade, and the various apparatus used in studying the heart are now commonly known. Why, then, this astounding high percentage of sudden deaths from heart failure, and the reprehensible figures of increasing numbers of cardiacs?

In the light of our better understanding of the factors governing heart work, heart power, these deaths are inexcusable, and must be attributed to carelessness. Deducting the factors of present day competition, control of our patients, the common practice of selfmedication, the sequelæ of major illnesses, there still remain the facts and figures of present day mortality statistics. These figures are interesting (10):

DEATH RATE IN 100,000 OF POPULATION, OCTOBER, 1922

Cerebral hemorrhage	55.7
Pneumonia (all forms)	40.4
Organic heart disease	104.2

COMPARISON OF CAUSES OF DEATH FOR FIRST TEN MONTHS OF 1921 AND 1922. ORDINARY BUSINESS OF FORTY-FOUR LIFE INSURANCE COMPANIES. NUMBER OF DEATHS AND DEATH RATES PER 100,000 EXPOSED.*

Causes of Death	First Ten Months 1921 No. of Deaths	First Ten Months 1921 Death Rate per 100,000	First Ten Months 1922 No. of Deaths	First Ten Months 1922 Death Rate per 100,000	Percentage 1922 of 1921 Death Rate
1. Typhoid fever	625	6.7	478	4.9	73.13
2. Influenza	608	6.6	1,527	15.7	237.88
3. Tuberculosis (all forms)	5,169	55.7	5,312	54.7	98.20
4. Cancer	5,476	59.0	5,753	59.2	100.34
5. Cerebral hemorrhage	4,465	48.1	4,542	46.8	97.30
6. Organic diseases of heart	7,732	83.3	8,723	89.8	107.80
7. Pneumonia—all forms.	4,085	44.0	4,839	49.8	113.18
8. Other respiratory diseases	818	8.8	719	7.4	84.09
9. Bright's disease	4,336	46.7	4,663	48.0	102.78
10. Puerperal state	420	4.5	409	4.2	93.33
11. Suicides	1,803	19.4	1,682	17.3	89.18
12. Homicides	550	5.9	480	4.9	83.05
13. Automobile accidents and injuries	1,029	11.1	1,076	11.1	.....
14. Other external causes	3,661	39.5	3,640	37.5	94.94
15. All other causes	19,197	206.9	18,195	187.4	90.58
16. Total—all causes	59,974	646.5	62,038	638.9	98.82
Years of life exposed to risk	9,277,402		9,710,360		

*The mortality experience included in this tabulation is based upon 83.15 per cent of the total number of ordinary policies in force December 31, 1921, in all American companies.

The medical advice given a patient, who because of obesity or for some other requirement shows the necessity for such a procedure, is, usually, "you need exercise," and in a general way the patient is left to his own devices. He seeks quite naturally to combine his exercises with the daily routine, or in many instances puts himself under the haphazard care of an athletic instructor, who, again in as general a way as the physician, recommends a course or series of exercises which are conceded to add to or diminish from the muscular development, height, weight, endurance, etc., of the participant.

In some gymnasia I have seen sphygmomanometers, stethoscopes, and other impressive paraphernalia displayed for the purpose of making a show of the care and safety with which patrons are selected for a specific course. In one such gymnasium, situated in the financial district and enjoying the patronage of prominent men, the socalled professor was of the opinion that excessive workouts were the only beneficial form of exercise, and his belief was enforced promiscuously! In another similarly situated gymnasium, the handball court was without windows or any other means of ventilation, being of necessity illuminated by electric lights. Such exertion, even though the mental effort is relieved in the form of competitive games, is of distinct harm to the man of forty or over, and especially so when it follows a period of sedentary inactivity.

Handball, tennis, basketball, jai-alai, track running, or, in short, such exertion as demands that the weight of the body be moved quickly and forcefully over a certain ground in a given time, are hardly suited to the capacities of the business man. After a week of indoor inactivity, suboxidation of muscle circulation, excessive diet, lack of bodily rest, bowel stasis, etc., the heart is in poor condition to withstand the strain of many pounds, often equalling several times the amount of the body weight.

The hopping test, for example, as used in the Army, wherein the soldier is made to hop one hundred times on one foot, gives the following amount of calculated work: A soldier, of the average weight of 150 pounds, hops one hundred times on one foot, thereby raising the toes about two inches from the ground and the knee about three inches. We reckon then the following equation: $150 \times 5/12$ (feet) $\times 100$, or over 6,000 foot pounds of energy (11). The heart, then, in so simple an exertion is capable of performing such heavy labor, and soon after, if the muscle is young and all other factors are equal, the circulatory concomitants, such as capillary flow and vessel dilatation, soon reestablish an even circulation.

It would be neglectful to ignore the stress and strain of present day civilization, which in their cumulative effect undoubtedly play a great part in the production of heart muscle degeneration and damage. Sooner or later, then, if an extreme demand is made upon such a heart, some sudden unaccustomed exertion, beyond its boundaries so to speak, the heart fails.

In 1912, an interesting controversy was begun around the question as to whether athletic training is dangerous. The origin of the debate was a paper written by the then Surgeon General of the Navy, in which he deplored the intensive training of the Annapolis cadet, and practically proved that athletic overwork, which could not be continued in sea service, had a decided influence on the after health of seamen.

Various instructors in the fields of athletics, both lay and professional, and representative of the largest universities in America, viewed such a radical condemnation from various angles. The *New York Times*, February 4, 1912, prints the diverse opinions of such men as Surgeon General Stokes, W. G. Anderson (Yale athletic supervisor and physician), Dr. Dudley H. Sargent, of the Hemonway Gymnasium, Harvard University, and others prominent in the athletic directions of the large colleges in this country. To be sure, the question was concerned with the ill effects of athletic training, yet most of the opinions were directed solely to football injuries.

preparatory training, diet, etc., ignoring entirely the broader question involved. Dr. Estes, physiologist of Lehigh University, who, because of his physiological reasoning, was perhaps better able to realize the main issues concerned in the mechanics of muscular energy, at that time discussed the question with a wisdom that can well stand today. He is quoted concerning cardiac dilatations or acute heart failure, in part, as follows: "Sometimes so severe or extensive that it at once terminates the usefulness of the youngster as an athlete, and requires months for proper recompensation." Dr. Dudley Sargent, of Harvard, advises against the competitive strain and tension in our various forms of college athletics to prevent the evils of overstraining and overtraining. If these ill results can follow exertion in the young, who are especially selected for the training table, how much more readily possible is overstrain and the end results of heart failure in the man of forty or fifty, whose body can much less withstand the trespass of the limits of cardiac capacity.

Systematic exercise or Army setting up exercises and the many means of mechanically stimulating the muscles to active or passive motion, all have a definite sphere. The vibration tables, pandiculation, Bante's, Schott, or Swedish resistance movements, all are beneficial in certain types of cases only. To use them in every case that seems to indicate obesity reduction, or energetic exercise, or to require the various factors associated with gymnastics, means that the patient is in as grave danger as though he were given promiscuous doses of a lethal drug.

To understand more fully the mechanics of the body as aroused by muscle exertion, it may be in place to review the motor physiology. The changes which occur are: 1. Circulatory (cardiac and vascular) primarily, and hemic secondarily. 2. Systemic or general changes. There is, of course, at once increased rate and force of the pulse. Increased velocity of blood flow, a more energetic and more complete distribution of the blood throughout the capillary bed and circulatory tree. The arteries and veins dilate to accommodate the increased blood volume, blood having left the organs and muscles in increasing amounts and is now in the circulatory stream (12).

Heart activity is increased to a proportionate degree depending upon the amount of exertion, the position of the body and other factors, i. e., rest period, conditions of respiration, presence of oxygen, etc. There is greater oxidation throughout the cells of the body, and there is a stimulation of the brain centres. The amplitude of the respirations increases, there is an increase in the blood pressure, both systolic and diastolic, which, in the normal individual, returns to average limits shortly after the exertion has ceased.

Such factors as previous rest, general fitness, overeating, overindulgence in tobacco or alcohol, coffee, etc., play a deterring rôle, not only in the condition of the athlete but in the effects, immediate and remote, of the exercise. Further signs of bodily activity are perspiration, which aids in the elimination of waste products and exhaust substances; increased intestinal peristalsis, because of the massage which the trunk muscles employ, and because of the action of gravity; increased secretion of all glands, because of the stimulus to the general circulation. The action on the muscle tissue itself is one of muscle fibre stimulation through its nerve endings and branches, and in consequence of the resulting increase in circulation, the muscle cells increase in size and eventually in number. Greater pliability to the whole body results, because of the greater metabolism of water in the muscles and their being accustomed to being used in various postures.

Therefore, it is evident that exercise in a general way is of decided and convincing benefit to the body, yet it is just on this apparently axiomatic principle that the danger is founded. To be sure, increased nutrition produces increased power of function, but from the cardiological viewpoint increased function may not be desired in a heart muscle that easily stretches and dilates, or which has not the tonicity to sustain itself during an exertion, no matter how slight.

The various functional tests that have for their aim the calculation of cardiac muscle value are not a reliable guide. To express this value in arithmetical equations, based on the factors of a certain weight, or, perhaps, a certain muscle group movement, does not take into consideration the other potent factors of cardiac vitality. Cardiac circulation, i. e., coronary arterial flow, controls, perhaps, most of the capacity of the heart's ability to do a certain work. Local metabolism within the heart also must be a considerable factor, as well as the forces included under the terms *vis a tergo* and *vis a fronto*. None of these units of cardiac physiology has as yet been measured in such a way as to be applicable according to a scale or rule to determine just how far the heart can exert itself.

Blood pressure readings, pulse increase comparisons, estimation of heart sounds, apical excursion, the occurrence of such signs as palpitation upon a given exercise, or, perhaps, the pain and dyspnea syndrome, do not offer the least dependable index of cardiac vital capacity.

SUMMARY.

1. There are at the present time no reliable functional capacity heart tests.

2. In prescribing exercise for the cardiac invalid, great caution at all times must be observed, and there should be capable supervision of such exercise.

3. No man in the fifth decade and beyond should be allowed athletics that require great energy unless he can be safeguarded against overexertion; and all exercise should be indulged in only when the conditions of the body vitality are favorable to it.

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Digitalis Taken Continuously for Thirty-Six Years

Clinical Note

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REPORT OF THE CASE

Mrs. B.I.L.I. came to me for a general appraisal of her heart condition and advice. She complained only of occasional slight dyspnea, but gave a remarkable history of heart disease and of having

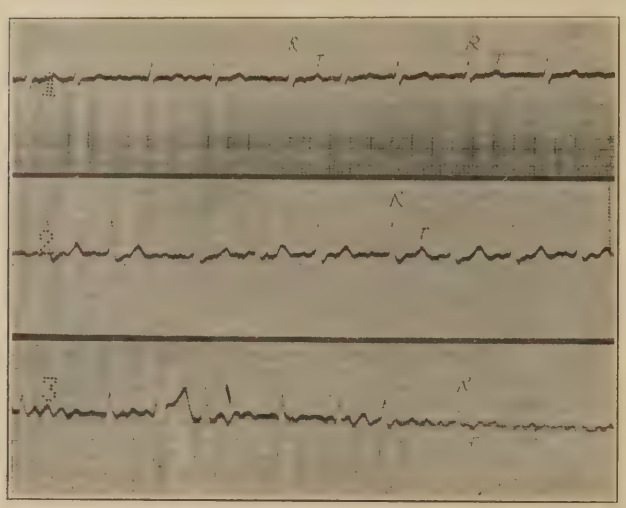

FIG. 1.—Electrocardiogram in a case of mitral stenosis with fibrillation giving a history of having used digitalis for thirty-six years.

taken digitalis continuously, almost daily, in regulated doses for thirty-six years.

At fourteen years of age she had typhoid fever and afterward was given digitalis in five drop doses, three times a day for a weak heart. About this time her pulse became irregular and ever since that time she has found it necessary to take digitalis in order that she may escape dyspnea and cardiac discomfort. She usually regulates the dose according to her feelings and seldom goes a day without taking some.

The accompanying x ray and electrocardiogram are typical of mitral stenosis with fibrillation. Note the straight sided heart of mitral stenosis and the general enlargement and moderate dilatation of the aorta which may have had origin in the general vascular involvement at the time of the typhoid fever.

The electrocardiogram shows absolute irregularity of the heart beat of fibrillation, with the usual absence of any definite P wave. The ventricular rate is about 90. In the third lead there is an extrasystole having its origin in the left ventricle. These are often seen in people who take digitalis.

The examination of the lungs, liver and spleen were negative. The pulse was irregular in force and rhythm and over the mitral area there was a loud rough presystolic murmur with a soft systolic murmur. Over the aortic region there was a soft systolic murmur. The blood pressure from extreme beats was 100 diastolic and 190 systolic, but most of the beats showed a lower systolic level.

The patient was advised that she was doing perfectly well and that she could continue to regulate her digitalis doses according to her need. Her own physician was congratulated on his wise management of the patient for so many years.

There are probably other records of people who have used digitalis for more than thirty-six years but I do not know of any.

A significant point concerning the value of this

FIG. 2.—Orthodiagram in a case of mitral stenosis and fibrillation giving a history of the use of digitalis for thirty-six years.

method of treatment is that during all this time the patient never had one serious attack of decompensation.

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Unrecognized Fractures of the Skull in Infants and Children*

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In looking through the literature, little is found about fractures of the skull in infants or small children; it being apparently taken for granted, that either the bones of babies' skulls are too soft and pliable to receive a fracture, or that the injury is so severe that it causes a depression with injury to the brain, thereby causing the usual symptoms as they occur in the adult. The greater number of cases of fractured skulls, with severe symptoms or death, are fractures of the base of the skull, while the unrecognized fractures, to which I wish to call attention, are usually those of the cranial vault.

Most fractures of the base are *contre coup* fractures, which will be explained later. The skulls of infants are elastic and with their close fitting integuments predispose to little displacement of the bones, and only where there is a sharp or circumscribed blow, does a depressed fracture result. Scudder observes that in infants there are large areas of fibrous tissue between the skull bones which prevent the transmission of force to the base of the skull from the vertex, hence basal fractures are rather unusual. Owing to the infrequent displacement of the fragments, healing is often very rapid and in fractures of the vault, the fracture may not be demonstrable by x ray after the lapse of a few weeks.

Visibility by x ray of the fracture at some time after the injury, is directly proportional to the amount of deformity and the malalignment of the fragments.

Every child during infancy or childhood has fallen on or was struck on the head. In most instances there were no bad results or even marked symptoms, and the injury was passed over without further comment. Many of these children undoubtedly received fractures of the skull and recovered without other symptoms than those of mild shock. These cases were classified as mild concussion, "shook up brain," or "bad bump." If there are no major symptoms of depression or hemorrhage accompanying the fracture, the diagnosis is often overlooked. But is it not possible, that the skull being fractured, without depression, brain injury or pressure symptoms, and with the remaining localized mild meningitis, that occurs in some cases, may in later years cause one of the many brain disorders which have thus far been unaccounted for as to their origin.

Baetjer and Waters (1) suggest that in all injuries to the head an x ray should be taken, and if this were systematically done, the recorded percentage of fractures of the skull would be materially increased. Severe injury to other parts of the body has caused the brain symptoms to be overlooked and the condition diagnosed as shock, hysteria, or nervousness.

Fractures of the vault, in infants and children, are usually the result of direct violence, the force being applied, where the patient has fallen upon the skull. If no depression results, the fracture may be of the green stick, fissured, or comminuted variety. The comminuted variety is usually less extensive than the green stick or fissured fracture so far as lines of cleavage are concerned. Fractures of the vertex may involve either one or both tables but usually the latter as the diploe is absent in infants (2). The lines of fracture visible on the outside of the skull are seldom an index of what may be found upon its inner surface.

Fracture by *contre coup,* in which the violence is transmitted by the arched construction of the skull, to an area more or less distant from the point of contact, is frequently met with. A peculiarity of this form of fracture is that it is never depressed.

Doubtless many cases of concussion of the brain following head injury are accompanied by some fissuring of one or both tables. Fractures of the base are more commonly noted, as they give more definite symptoms of skull injury. The base is more readily fractured as it is nearly flat and is weakened by the large foramen magnum and the other numerous foramina. It is also very thin, being translucent in some portions. The base is protected by the structures of the neck below and by its great mobility upon the cervical vertebrae. The brain is also protected by a layer of cerebrospinal fluid between

*Read before the Clinical Society of the Hospital for Joint Diseases, November 14, 1922.

it and the base upon which the brain rests as on a water bed. The only place where the brain actually touches the base is where the under surface of the anterior lobes of the cerebrum rests upon the orbital plates of the frontal bone.

Nancrede has called attention to wounds caused by the passing of a small pointed instrument through the retrotarsal conjunctival fold, then penetrating the orbital roof leaving very little trace of injury, especially in children. A blow upon the nose may fracture the ethmoid bone and drive it upward against the brain. A blow or fall upon the chin may drive the condyle of the lower maxilla through the glenoid fossa.

Fairchild (3) gave the following conclusions. Violence of no great intensity applied to a limited skull area, may cause, 1, an injury with only temporary displacement, with rupture of a meningeal artery, without fracture; 2, fracture, without displacement or hemorrhage but causing pressure irritation and sclerosis; 3, scars, adhesions, cysts.

A better classification is as follows:

A.—Fractures of the vault.
1. Fracture of external table without fracture of internal table.
2. Fracture (slight) of external table with comminuted fracture of internal table.
3. Green stick fracture; bent external table and fractured internal table.
4. Linear or fissured fracture.
5. Depressed fracture.
6. Contrecoup fracture.
7 Perforating fracture.

B.—Fractures of the base.
1. Without injury to the brain.
2. With injury to the brain.

This classification is self explanatory but requires the following comment.

FRACTURES OF THE VAULT

1. Fractures of the external table without fracture of the internal are seen in cases of glancing blows, glancing bullets (gutter fracture), where the external table is "just chipped off."

2. Slight fracture of external table with comminuted fracture of internal table is usually included under the linear or fissured fractures.

3. Green stick fractures are those where the external table is dented in and the elasticity of the bone often permits it to rebound at once to its normal shape. This may or may not be accompanied by a fracture of the internal table. These fractures give no symptoms unless there is an accompanying hemorrhage. Birth injuries are usually of this type.

4, 5. Linear and fissured fractures are characterized by the cracking of both external and internal tables, the latter as a rule being more broken up than the external. Unless one of the splinters of bone projects into the dura or meningeal arteries, causing hemorrhage, they are, as a rule, not recognized. Depressed fractures are caused by the applied force being continued, thereby driving the fragments inward and injuring the dura and brain, with or without definite symptoms.

6. *Contre coup* fractures are usually of the base. The point of trauma is opposite or at a distance from the point of fracture, due to the elasticity of the cranial bones as a whole, with the greatest point of force opposite to the point of trauma. Cases have been reported where a blow on one side of the head fractured the bone on the opposite side, without injury to the base.

7. Perforating fractures are usually the result of explosions and are rarely seen in infants. Many cases (especially in adults) have been reported of very serious perforations of the skull, with loss of brain substance, where there were few, if any, symptoms, except the immediate shock.

FRACTURES OF THE BASE

While less frequent in children than in adults, fractures of the base of the skull are much more dangerous and usually give symptoms. The most common site of fracture is through the middle fossa, breaking the petrous portion of the temporal bone at its weakest part, i. e., in the neighborhood of the middle ear, and from this point fissures may extend in any direction. These are the most common and most dangerous. Fractures of the posterior fossa are often overlooked in the absence of symptoms and may only be found at postmortem examinations. Fractures of the anterior fossa usually give symptoms but occasionally a case is seen with few or no immediate signs.

Fractures of the skull, unless the fractured portion of the inner table causes symptoms of cerebral irritation, or unless there are signs of compression by coexisting hemorrhage, will not be recognized unless an x ray picture is taken. In the x ray pictures linear fractures are often confused with grooves of vessels. Stereoscopics should be used for differentiation. Fractures of the skull are usually diagnosed by the symptoms of injury to the underlying brain with its coverings, vessels and nerves, except in cases where there is an obvious depression of the skull or bleeding from the ear, nose, or subconjunctival hemorrhage.

Harte (4) observes that an uncomplicated fracture of the bones of the vertex is not any more serious than that of any of the flat bones. The danger is injury to the parts beneath. The consensus of opinion is that in fractures of the base the mortality is from thirty to forty-five per cent. Death from vault fractures is about twenty per cent. It is lowest in children due to the fact that many are of the so called green stick variety.

TREATMENT

The treatment of skull and brain injuries belongs to the surgeon. If there are no symptoms of depression or of brain injury, expectant treatment is the course to pursue. If there is evidence of depression or pressure on the brain, immediate surgical treatment should be resorted to. Communited vault fractures should have a thorough exploration. All fragments should be removed. Replacing fragments is frequently employed.

We may classify the aftereffects as follows:

1. Most fractures without depression become absolutely well.

2. Cases of mild concussion with loss of consciousness for a few seconds, often show subsequent changes in disposition.

3. Chronic headaches, usually of a constant dull aching type.

4. Inability to stand high temperatures.

5. Epilepsy, due to irritation, produced by bony spicules from depressed internal table, with blood effusion, resulting in thickening of the meninges and the formation of cysts, either beneath the site of the injury or on the opposite side.

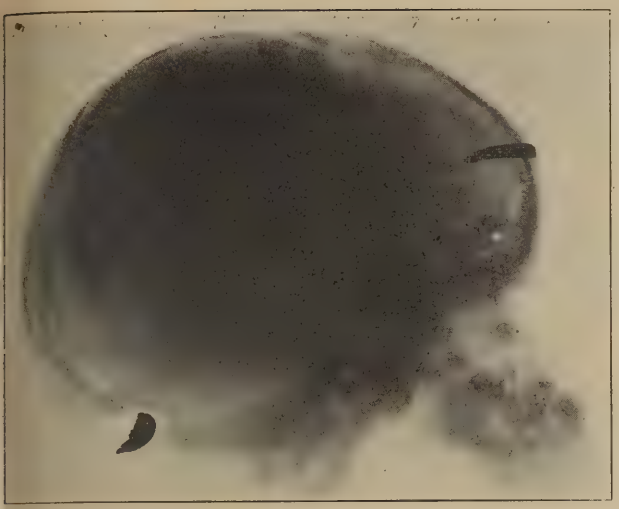

Fig. 1.—Case I. Fracture extending from the vertex downward and forward through the parietal frontal bone to the edge of the orbit; comminuted fragments at the apex.

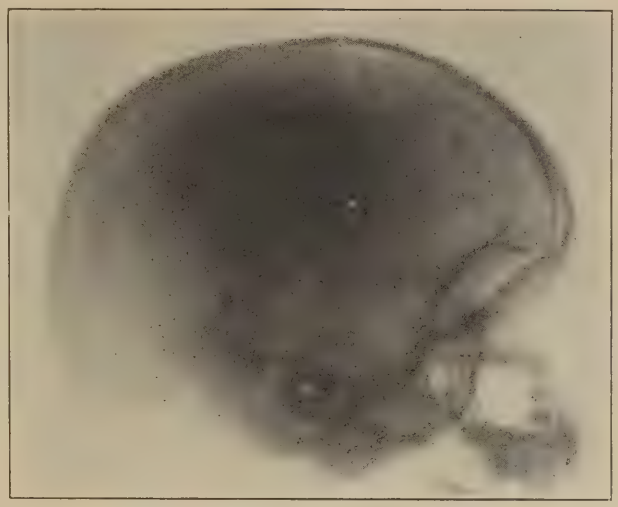

Fig. 2.—Case II. Extensive stellate fracture of the frontoparietal region, left side of cranial vault and a longitudinal fracture in the posterior fossa on the left side.

The following are the histories of a few cases, in which fractures of the skull were overlooked.

Case I.—A. S., aged three and one half, was a normal, intelligent child before the accident. On April 8, 1922, he fell or was thrown into a cellar from sidewalk, picked up unconscious, bleeding from right nostril, head and face bruised, was taken to a drug store, where cold applications to nose stopped bleeding. Two days later face became swollen and right hand and forearm became painful and swollen, was taken to a hospital, vomited several times, two days later fever developed. The physician at the hospital said, "it was a cold and bruises but no fracture." Next day x ray of forearm with negative report. The following day diphtheria developed and the patient was removed to a hospital for contagious diseases. Was there for four and a half weeks, in a poor condition, but sent home as physician thought the child would do better at home. The child had no appetite, was restless, had insomnia. Two days later the patient was taken back to the hospital where he was examined but nothing found. The patient was referred to the Hospital for Joint Diseases on June 23, 1922. Blood examination: Hemoglobin 62 per cent., red blood cells 4,048,000, white blood cells 7,200, Wassermann negative, eye examination negative, neurological examination negative, speech somewhat worse than before accident, confused at times, and did not walk as well as before. X ray showed arthritis of right elbow and wrist, atrophy and absorption of carpal bones. Synovitis of left elbow. X ray of skull showed an oblique fracture, extending from the vertex of the skull downwards and forwards through the parietal and frontal bones to the edge of the orbit; comminuted fragments at the vertex. Large V shaped fragment. No evidence of depression.

Fig. 3.—Case IV. Stellate fracture on right side of frontal bone.

Case II.—A. G., aged five. Two months before the examination the child fell through a coal hole, striking the back of its head, also receiving lacerated wound over right patella. The child was unconscious and had mild convulsions for ten minutes, bled from nose and vomited. Since the accident child had been very nervous and wet the bed; also suffered from occipital headache with stiffness of the neck and tenderness over the occipital region. For several days after the accident the child had fever and limped due to the injury to the knee. Present examination showed stiffness of the neck and tenderness over the occipital region and the child still complained of headache. The fundi were negative and reflexes were normal. Neurological examination was negative but the child has had tetanic attacks since the accident. X ray showed extensive stellate fracture of the frontoparietal region, left side of cranial vault, and a longitudinal fracture in the posterior fossa on the left side. No evidence of depression.

Case III.—H. T. E., aged two and a half. Occiput presentation at birth, noninstrumental delivery. At the age of three months it was noticed that the child held right upper extremity more limply than left but there seemed to be no paralysis. When the child was nine months old it was noticed that he used the left hand instead of the right and also held his head backwards and towards the

left. There were no convulsions. A diagnosis of right hemiplegia was made by a pediatrist and the child was referred to the Hospital for Joint Diseases, for massage and electricity. Routine examination showed a mentally backward child that could not walk without aid. The child was microcephalic and suffered from a birth hemiplegia. The Wassermann was negative. X ray showed a fracture of the middle fossa, on the left side, with distinct separation at the line of fracture. Also a fracture of the condyle of the left mandible with deformity was discovered. After the x ray diagnosis was made the mother recalled that at the age of six months the baby fell from a high chair, falling upon his head and nose. The nose, forehead and face on the left side became swollen and there was a marked decrease in the movements of the right upper extremity.

Case IV.—G. L., aged six. At the age of six months child fell out of bed striking head in the right frontal region. Nothing was thought of his accident at the time. The child was brought to me because it was badly behaved, wild and uncontrollable. X ray revealed a stellate fracture on the right side of the frontal bone. There was no depression. The fracture lines were faint in character apparently due to the fact that the fracture was of several years' standing.

Case V.—S. W., aged six and a half. This child was run over by a laundry wagon, the wheels passing over the pelvis. There was no loss of consciousness. Immediate examination showed bleeding from the vagina and urethra and an abrasion of the right thigh. Stellate fractures of the vault of the skull running into both temporal regions were shown by x ray examination. Fracture of the pelvis was also demonstrated. There had been no symptoms of fracture of the skull at any time, and this was shown only by x ray examination.

SUMMARY

The immediate symptoms in these cases when of sufficient importance to be noted at the time of the injury were due to meningeal irritation and congestion or to concussion of the brain. As the pathology of concussion is now conceded to be the rupture of brain capillaries, we may get the symptoms from very slight hemorrhages which are gradually absorbed and the symptoms relieved. Many of the obscure brain conditions of later life may have their origin in mild degrees of concussion. Therefore a guarded prognosis should always be given.

In conclusion, I would suggest that in every case where a child has fallen on or been struck upon the head, an x ray examination of the skull should be made and a careful history should be taken in order that no fracture of the skull should be overlooked.

I wish to acknowledge my indebtedness to Dr. Henry W. Frauenthal, surgeon in chief of the Hospital for Joint Diseases, for the privilege of observing and reporting these cases.

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Postdiphtheritic Paralysis*

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In combating diphtheria physicians have to deal with one of the most insidious diseases that is prevalent today. This insidiousness exists because of the absence of marked symptoms of onset which, if present, would make an early diagnosis possible. It also exists because of the frequent similarity of the disease in its early stages to a simple attack of acute tonsillitis. Many patients are doomed before they are brought to the attention of the physician. Another factor which often lessens the patient's chance of recovery is the belief that a positive throat culture must be obtained before the diagnosis can be made and antitoxin administered. What chance has a patient, especially a child, if there is a delay of a day or two before it is decided that the trouble is in the throat, and then if there is a further procrastination of forty-eight hours or more before administering antitoxin, while awaiting the culture report? Very little indeed!

Again and again the State Department of Health has advised to give antitoxin first in a suspicious case and make the diagnosis afterward. Only by this method will the present mortality of this disease be further lowered. Why is it that the sporadic cases and the first cases in an epidemic are likely to be the fatal ones? Because these patients do not get the benefit of immediate specific treatment which others receive after the presence of the epidemic is fully recognized.

A negative throat culture may mean nothing. Any throat presenting a membrane of any description may be diphtheritic, especially if areas other than the tonsils are involved. It is astonishing how many cases one may see which yield rapidly to antitoxin and yet give a negative throat culture. Some of these may be cases of Vincent's angina or septic sore throat with a streptococcus membrane but strangely, in the latter too diphtheria antitoxin seems to have a beneficial effect.

The purpose of this article, in addition to sounding a warning note against procrastination in the treatment of diphtheria, is to present specific example of one of the late, and often most serious complication of this disease, namely death from postdiphtheritic paralysis.

*From the Medical Service of the Southampton Hospital, Southampton, N. Y. Read at the meeting of the Hampton Clinical Society, July 24, 1923.

Elsewhere (1) one of the writers has reported complete recovery from a general postdiphtheritic paralysis, of an adult who received no antitoxin. Unfortunately such a favorable outcome is uncertain; a fatal outcome is often present even in such cases as have received antitoxin two or three days after onset. Early treatment with sufficient dose would make this late complication almost unknown.

Paralysis is more a sequel than a complication. Its onset is usually during the second or third week of convalescence, at a time when one would think that recovery was assured. It is more frequent in adults than in children. Of 494 cases referred to by Osler, ninety-one died. The parts affected in their order of frequency are the muscles of the palate, pharynx, eye muscles, legs, arms, with the loss of reflexes inherent in each. Often the onset begins with one of the above paralyses and progresses gradually until heart and respiration alone remain active. Death may be due to aspiration pneumonia, starvation or paralysis of muscles of heart or respiration.

CASE REPORTS

The first case is an echo from the dark ages of medicine. In spite of the details herein related the family physician believes to this day that the disease was not diphtheria and the health authorities in the state in which the tragedy had its inception still assert that the negative throat cultures rule out the disease.

Case I.—M. P., aged three and one half years, female, children's ward, Hosp. No. 6841. Admitted July 26, 1922, died July 29, 1922. The chief complaint was weakness of the legs.

In March, 1922, two months before the present illness, the patient's infant brother, aged two months, was operated upon in a city outside New York State, by the family doctor for "tongue-tie." Two days later the wound became covered with a white membrane, followed by swelling of the tongue and a rapid spreading of the membrane. There was a foul odor to the breath, foul smelling mucosanguineous nasal discharge and swelling of the cervical nodes. The tongue became a white mass. No cultures were taken. This child recovered. No prophylactic doses of antitoxin were given to the other members of the family either at this or any other time.

One week later the mother's throat became sore and was treated for tonsillitis. Throat cultures were negative for Klebs-Loeffler bacilli. The mother recovered. She experienced some numbness and tingling of the extremities during convalescence.

The third week in March the throat of one sister became sore, as had the mother's, accompanied by profuse bloody foul smelling nasal discharge. Seven different cultures were pronounced negative by two different laboratories. Four days later six thousand units of antitoxin were given. This child died.

One week later the father was similarly affected with a sore throat. This was also cultured and a negative report rendered from the laboratory. A foul smelling, thick membrane covered the palate. The patient was in bed four days. He received no antitoxin. On the ninth day the heels became tender so that walking was painful. Red spots appeared on the inner aspect of the calves of the legs, lasting one week. The feet were considerably swollen and remained so for three weeks. The father recovered completely.

There were no similar cases at this time in the city nor had there been for a long time previously. The nursemaid was proved by three cultures to be no carrier. Schick tests were refused by the family. During these occurrences the patient was absent in another locality and perfectly well. The past history was negative.

The patient, M. P., returned home to the family in June, 1923. On June 11th she also acquired a sore throat similar to those described above with membrane formation. The breath was fetid. The membrane covered the tonsils and pillars. Throat cultures were also negative. On the third day, although throat culture was negative three thousand units of diphtheria antitoxin were given. The throat condition immediately began to improve, the membrane curling up and coming off in patches. There was slight laryngeal paralysis at this time. On the sixth day the child was out of bed, part of the time. However weakness of the palatal reflexes soon appeared, improved for a time, then became notably worse. On the eighteenth day the patient was well enough to travel and came to Long Island. After a month it was noticed that the child could not walk normally, stumbling on attempts to run. She then was admitted to the hospital for treatment of the paralysis.

The patient, a girl, was lying in bed, moving restlessly and tossing about. Her mind was clear; she answered questions, but with considerable speech defect, as if unable to form certain sounds. There was no evidence of somnolence. The pupils were equal, reacting readily to light and in accommodation. There was a ptosis of both lids, more marked on the right, and an internal strabismus of the right eye, ocular fundi were normal. There was no rigidity of the neck. The lungs were negative. The heart rate was rapid, sounds weak, rhythm regular, no adventitious sounds, pulse regular but weak.

There was marked weakness of all muscles of the extremities most noticed in distal portions, although all motions could be made. No elbow, wrist, patella, nor Achilles jerks were obtainable. The Babinski was negative, Kernig negative. A diagnosis of postdiphtheritic paralysis was made. After admission all findings noted above became more marked. Saliva collected in the throat and mouth and drooled out. The extremities soon became totally paralyzed. On July 29th the patient died of respiratory paralysis. Before admission treatment had consisted of strychnine sulphate, 1/100 grain by hypodermic three times daily, with massage twice a week. Upon admission massage was discontinued. Digitalis was given by hypodermic when the pulse became weak. During the last day nourishment was given by gavage.

Case II.—M. S., aged twenty-one, female ward, Hosp. No. 7410. Admitted, May 5, 1923, died May 5, 1923. The chief complaint was paralysis. The family history was negative. On March 15, 1923, the patient left Chicago, breaking quarantine, where her brother had died of a disease unquestionably diphtheria. She proceeded to her home on Long Island with two children. One of these two children

had been ill with a sore throat in Chicago, received diphtheria antitoxin and recovered. The other child reached home with a sort throat resembling follicular tonsillitis but culture proved the disease to be diphtheria. Antitoxin brought a prompt recovery. All other members of the family except the patient received a prophylactic dose of antitoxin and remained well.

Two weeks later after her return home a sore throat developed which simulated acute tonsillitis for forty-eight hours when a dense membrane developed with pronounced edema of the pharyngeal walls. Twenty thousand units of antitoxin were at once administered following the appearance of the membrane. Cultures were positive. The membrane disappeared in thirty-six hours, the edema in forty-eight hours. Five weeks later paralysis of the palatal muscles developed, followed by laryngeal paralysis, and later by paralysis of the muscles of deglutition, then of the face, arms and legs, in progression. On May 2nd hospital care was sought.

The patient was robust, well nourished, and well developed, suffering from great physical weakness, very pale but not cyanosed. The pupils were equal, reacted to light and accommodation, slight ptosis of both lids. There was weakness of facial muscles, paralysis of palatal muscles. All fluids taken were regurgitated through the nose. The patient was able to swallow salvia. The muscles of the larynx were partially paralyzed, voice husky with nasal twang. Effort of talking brought on coughing and dyspnea. The heart sounds were weak, rate 120, regular, no murmurs. The patient was unable to rise, walk or feed self. Flexion and extension were possible but very difficult. Flexion of fingers was impossible. Reflexes were universally diminished or absent.

On admission the patient was mentally clear, of good color and slightly nauseated. Five hours after admission sudden cyanosis of the extremities developed, which the patient noticed and exclaimed "I am dying, see how dark my hands are," and immediately fell back dead. The immediate cause of death was evidently paralysis of the heart, as the circulation first failed.

CONCLUSION

From the consideration of these two cases we wish to stress the following points:

1. Any throat membrane may be diphtheritic.
2. Give antitoxin first and then await the result of the throat culture. A negative report may mean nothing.
3. Immunize all contacts at once.

If these facts are carried in mind and acted upon it will be possible to still further reduce the morbidity and mortality of this treacherous disease.

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Juvenile Tabes Dorsalis with Destruction of Hips from Charcot's Disease*

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This patient is now eighteen years of age. When she was fourteen, while doing gymnastic exercises, she dislocated—or thought she had dislocated—her right hip. Later on, she was able to walk and run, her hip remaining out of place. She had pain which extended down her limb to her foot. She walked with a limp because of the shortening. She received chiropractic treatment. Later she was operated upon by a prominent orthopedic surgeon who removed the débris of the hip joint which had been destroyed. This was followed by drainage for twenty-two weeks. She wore a brace and a high shoe on the affected side to make up for the shortening. Injections of neosalvarsan were begun at this time. She has been treated in several hospitals since then and at a sanitarium at the seashore.

I first examined her in May, 1921. Her right lower limb was two and three quarter inches shorter than the left. The thigh could be flexed above a right angle, and in all other directions the range of movement was normal. The upper extremity of the femur was dislocated upward and moved freely about on the innominate bone. There was about two inches of free play upward and downward. Swelling and fluctuation indicated the presence of a large amount of fluid about the hip. The knee reflexes were absent. The pupils did not react to light. The x ray picture showed complete destruction of the head and neck of the femur with an upward dislocation of the shaft. The acetabulum had almost melted away. Up to this time she had received over fifty injections of neosalvarsan. The temperature range was from 98° to 102° and the pulse from 88 to 130. Weekly injections of neosalvarsan were given.

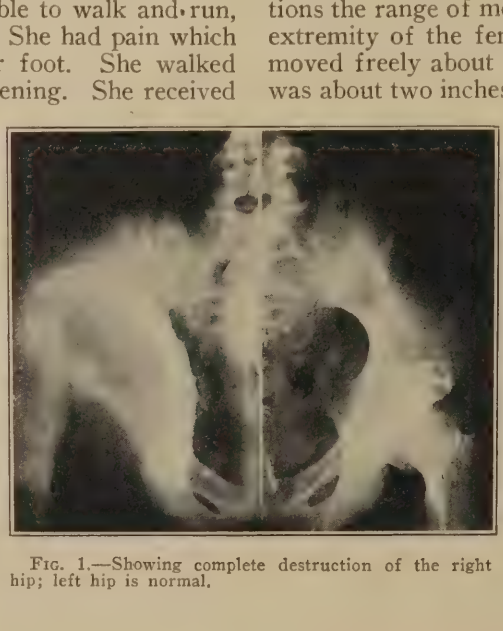

Fig. 1.—Showing complete destruction of the right hip; left hip is normal.

*Read before the College of Physicians of Philadelphia, January 2, 1923.

Two and a half months later the patient had improved in every way. She had a good color, had gained in weight, the fluid about the hip had been absorbed. She was provided with a brace with a padded ring so that her weight was borne by the tuberosity of the ischium and none by the hip.

She could walk without crutches. The temperature by this time remained about normal although the pulse rate was rather rapid.

The patient returned to her home August 9, 1921. She was again admitted for hospital treatment in November, 1922. Her general condition was very satisfactory. She was in good health, temperature and pulse normal, no fluid about the hip, very little free play upward and downward of the femur upon the ilium. It required a three inch block under the right foot to square the pelvis and straighten the spine. Injections of neosalvarsan were given.

Up to this time x ray pictures of the left hip had revealed nothing abnormal.

On the day that she was to leave the hospital she slipped while standing beside her bed but managed to fall over upon the bed instead of falling to the floor. She told me about this, fearing she might have injured her left hip. I examined her left hip as she lay supine upon the bed. The range of movement was free and normal in all directions, no crepitus, no pain and I assured her the hip was uninjured. She left the hospital that afternoon.

On reaching home, she climbed three flights of stairs and suddenly felt her left hip give way. I saw her at her home three days later—December 2, 1922. She had pain in her left hip and could not bear her weight upon it. There were marked tenderness and swelling about the hip and bone crepitus on motion. A diagnosis of fracture of the neck of the femur was made.

Fig. 2.—Showing the left hip still normal in June, 1921.

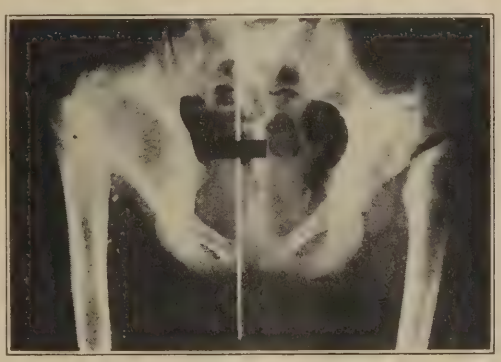

Fig. 3.—Showing that the left hip is following exactly the same course as the right.

She was readmitted to the hospital. Temperature 102°. Buck's Extension applied. Aspirated fluid was sterile. X ray pictures confirmed the diagnosis: that is—pathological intracapsular fracture of the neck of the femur due to the onset of Charcot's disease. The hip was immobilized in plaster of Paris from the toes to the thorax, another course of neosalvarsan was given, the temperature and pulse became normal, the fluid about the hip was absorbed.

January 22, 1923, the plaster cast was removed and braces put on. The patient then began to walk with crutches, no weight falling upon the hips but entirely upon the tuber ischii. She went to the seaside April 2, 1923.

October 22, 1923, she was again admitted to the hospital for examination. The x ray picture showed the upward dislocation of the shaft of the left femur and a considerable portion of the head of the femur still remaining. The destruction of the acetabulum was following much the same course as in the right hip.

The patient had discarded her braces of her own accord in July and was walking with crutches. I had intended to protect her hips from weight bearing for a long time—that is, long enough to permit dense fibrous connective tissue to firmly imbed the upper extremity of each femur upon the innominate bone, thus providing her with useful hip joints. Temperature and pulse were normal, she had gained in weight; her general health was excellent, no evidence of fluid about either hip; she was learning to walk a little—rather unsteadily—without her crutches; she had no pain.

The absence of the patellar reflexes, the Argyll-Robertson pupil and Romberg's symptom were clear indications that the earlier diagnosis of tabes dorsalis should remain unchanged.

The patient's attitude as she stands or walks is almost identical with that of double congenital dislocation of the hip. There is the marked lordosis and the prominence of each femoral extremity as it lies upon the dorsum of the ilium.

This girl is mentally normal, her intelligence if anything is rather above the average. She has a cheerful and happy disposition and has always been a favorite among the other patients in the hospital ward.

A series of Wassermann examinations was carried out from the time the patient first came under our care to the present time and the only items of importance are as follows:

On November 16, 1922, the blood Wassermann was negative, the spinal fluid strongly positive, globulin negative, cells three per c. mm. On October 19, 1923, blood Wassermann was negative, spinal fluid negative.

Locomotor ataxia is a very unusual disease in children. It is so unusual that the textbooks of pediatrics that I have examined do not even mention it. We have not been able to find any recorded case similar to the one here presented.

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The Recent Recrudescence of Epidemic Infantile Paralysis

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Recently Greater New York has again been visited by a moderately severe epidemic of poliomyelitis. A large number of cases were reported to the Health Department, and, as usual, a far greater number remained unreported for fear of quarantine. Eighteen cases came under my observation as consultant. The disease appeared in a rather mild form. The sensorium was but lightly affected. None of these children suffered from convulsions and the paralysis as a whole was not as extensive and as permanent as in the previous epidemics (1). Moreover, in contrast to the epidemic of 1916 this epidemic was accompanied by few deaths. None of the eighteen children succumbed to the disease. In eight of the patients the paralysis was limited to one extremity, and four of them, in whom the deltoid was mainly affected, recovered almost completely in a few weeks. In six children both the upper and lower extremities were involved, the upper improving very rapidly and the lower more slowly, but thus far (over two months) showing no deformities. Two children had difficulty with the respiratory muscles, in addition to paralysis of the arms. In two cases the gluteal and spinal muscles were paralyzed and were entirely overlooked by the parents. I may add, by the way, that in view of the facts that the recrudescence of the disease in epidemic form was at first not suspected, that the initial symptoms were not characteristic, that the great majority of the patients complained of severe pain in the muscles, and, finally, that as a rule the paralysis set in unusually late (in two cases after ten days), even the physicians in attendance hesitated to arrive at a definite diagnosis, in the majority of instances being inclined to attribute the symptoms to digestive disturbances, rheumatism or influenza. Such errors could mostly have been obviated by bearing in mind the cardinal symptoms of poliomyelitis, whether or not an epidemic prevailed.

In order to obtain a clear conception of the symptom complex of this affection, it is most essential to keep in mind its pathological anatomy. Contrary to what was formerly believed, the lesions of socalled anterior poliomyelitis are not limited to the anterior horns of the spinal cord. It is now definitely established that no portion of the cerebrospinal system is exempt from involvement. Indeed, as is the case with other grave communicable diseases, the lesions are frequently disseminated throughout various other structures and organs of the body. Macroscopically the meninges are found injected and edematous, and the brain and cord moist, translucent and edematous. The gray matter of the cord is also swollen and projects above the level of the white matter. Minute hemorrhages are often discerned in both the gray and white matter, the former frequently assuming a grayish pink hue. The cerebrospinal fluid is but little increased. Microscopically, the pathological process is found to consist chiefly of a cellular exudation, hemorrhage and edema. The lesions are most pronounced where there is an abundance of bloodvessels, i. e., in the cervical and lumbar enlargements, more particularly in the anterior horns. According to Peabody, Draper and Dochez (2), the cellular exudate forms a sheath surrounding the vessels for long stretches, and, in many places, the cells are so numerous as to form thick collars which seem to press on the lumen, thus exerting a mechanical effect in obstructing the circulation. A similar mechanical as well as toxic action is progressing in the inner lining of the bloodvessels, the conjoint pressure soon leading either to hemorrhagic softening or anemia-pressure-necrosis of the infiltrated structures and gradual replacement of the ganglion cells by cicatricial tissue. This terminal pathological stage is often not reached where the pressure is early relieved by absorption of the hemorrhagic and cellular exudates —hence the large number of mild and socalled abortive cases, and the tendency towards spontaneous recovery. As already stated the virus of poliomyelitis is productive also of extensive pathological changes in other parenchymatous organs and in the lymphoid tissues. Pyer's patches and some of the mesenteric glands show lesions resembling those observed in typhoid fever—hence the frequency of abdominal symptoms, e. g., diarrhea, during the course of the disease. The superficial glands of the body, the tonsils, the thymus gland, the liver and occasionally the spleen are considerably enlarged. At a later stage the muscles show definite signs of degeneration. Some of their fibres disappear entirely and others are shrunken, the whole limb becoming atrophied as a result thereof. Often the bones participate in the pathological process.

Corresponding to the complex pathological anatomy of the disease, the symptomatology is equally multifarious. In fact, it may vary in each epidemic. Thus, whereas in 1916 the majority of cases were cerebral in character, in the recent outbreak the spinal types prevailed, as originally described by J. Heine (3). The symptomatology generally manifests itself in the following manner: After an incubation period lasting from three to twelve days and towards the end, indicated by indefinite signs of ill health, such as slight fatigue, irritability, and anorexia, the temperature all at once rises, up to 104° F., the child complains of irregular muscular pain, headache and sore throat, or is seized with an attack of indigestion, more especially vomiting and sometimes diarrhea and more rarely convulsions. Physical examination reveals diffuse congestion of the throat, with or without a slight grayish deposit upon the tonsils, slight rigidity of the neck, chiefly on bending the head towards the sternum,[1] marked paraesthesia, muscular tremor or jerking, distinct drowsiness or stupor (in the cerebral cases) and irritability when disturbed. The mind is usually clear even in grave cases. The heart's action is gen-

[1]This symptom is best elicited by asking the patient, if old enough, to repeat "yes." Whereas normally a child usually emphasizes the spoken word by moving the head downward, in poliomyelitis it hesitates and has to make a distinct effort to do so and yet fails to bring the chin close to the sternum.

erally exaggerated, even with a low temperature. These symptoms may remain stationary for from one to three days or even much longer as it happened in the cases here reported, and then either show a tendency towards spontaneous abatement (abortive type), or get rapidly worse—herald the advent of paralysis. This cardinal symptom is often preceded by progressive muscular weakness, and may remain localized or spread rapidly to other parts of the body, the degree of severity and extent of the paralysis depending upon the gravity and seat of the lesion. In the majority of instances, especially during mild epidemics, the pathological process is limited to the spinal cord (spinal type). In this event the paralysis usually involves the extremities only, or less frequently the neck, abdomen, or chest as well. The paralysis may be partial or total. The extremities are usually affected in the following order of frequency: One leg, both legs, one arm, both arms, one leg and one arm on opposite sides, or more rarely on the same side, both legs and one arm, both legs and both arms, both arms and one leg. Occasionally the paralysis remains limited to a group of muscles or even to a single muscle, e. g., the tibialis anticus, gastrocnemius, or deltoid, and is not rarely overlooked until atrophy has set in. When the muscles of the neck are implicated, the child is unable to hold the head erect; the head falls forward or backward (head drop), or sways from side to side. In paralysis of the abdominal muscles, owing to active intraabdominal pressure by gases, ballooning of the affected muscles is soon noted (Fig. 1) which contrasts strongly with the flatness of the intact muscles. With involvement of the spinal muscles, the patient is either totally unable to turn around or to move from side to side while flat on his back or shows a peculiar clumsiness in doing so. The same holds true when attempting to assume a sitting posture without assistance. This paralysis is often overlooked until frank scoliosis has made its appearance (Fig. 2). Sometimes the paralysis manifests itself in stages, at intervals of variable duration, so that the muscles implicated first may already be on the mend. Where the lesions are limited to the lower neuron the paralysis is flaccid in character, the tendon reflexes are greatly diminished or lost and the reaction to the faradic current is lost. The reaction to the galvanic current may persist for some time longer. Sensation is but slightly impaired. There is no tendency to acute decubitus.

In a small percentage of cases the paralysis, beginning with the lower extremities, gradually spreads upwards (progressive or ascending type, resembling Landry's paralysis), involves the upper extremities, the external muscles of respiration and the diaphragm, if the lesion reaches the upper portions of the cervical cord. Such cases often end fatally from respiratory failure. In another group of patients the paralysis may start in the arms and from here spread downwards (descending type, resembling transverse myelitis) to the lower extremities. In these cases we usually find paralysis of the vesical and anal sphincters, giving rise to urinary retention or dribbling and obstinate constipation or incontinence of feces.

In another group of cases the inflammatory process extends to the medulla (bulbospinal type). The lesion is generally unilateral, and clinically characterized by partial or total paralysis of some of the cranial nerves, in addition to the manifestations observed in the purely spinal variety of poliomyelitis. As a rule the facial and abducens are affected, less frequently the glossopharyngeal and vagus and more rarely still the hypoglossal nerve, in which event the patient presents not only facial paralysis, inwards strabismus, and more or less marked respiratory difficulties (Cheyne-Stokes like breathing, cyanosis and cardiac arrhythmia), but also disturbances of phonation and deglutition. These cases are usually grave, and not infrequently fatal. In the absence of concomitant paralysis of the extremities they are likely to be mistaken for laryngeal diphtheria. I have on several occasions been invited to intubate such patients.

Where the cord remains free and the medulla alone is involved, the tendon reactions are generally exaggerated, the limbs more or less rigid and the gait ataxic in character (ataxic type). It is not at all uncommon, especially in infants in whom the other symptoms are not readily obtainable, for facial paralysis to form the principal symptom of the affection and in the absence of an epidemic to be looked upon as a peripheral facial paralysis (Bell's palsy). The diagnosis, however, can be established by bearing in mind the fact that in nuclear paralysis the palsy is limited to the lower half of the face. Where the pons is also implicated (pontine type, Fig. 3) the symptomatology is further exaggerated by the concurrence of oculomotor paralysis, which may lead to partial or total ophthalmoplegia, and crossed paralysis or hemiplegia alternans.

Quite frequently, especially during severe epidemics, a group of symptoms of poliomyelitis is encountered which greatly resemble those of initial meningitis or encephalitis (cerebral or encephalitic type—polioencephalitis Strümpell), viz., recurrent explosive vomiting, convulsions, rigidity of the neck up to opisthotonos, and marked stupor. Kernig's and Brudzinski's signs are usually inconstant and appear late, and seem to be due rather to the resistance on the part of the child to the painful flexion of the spine. After a day or two partial or complete spastic paralysis of one or of several extremities supervenes, not rarely accompanied by involvement of the facial and other cranial nerves. In some cases there is also marked incoordination of the extremities. The tendon reactions are greatly exaggerated. When the polioencephalitis becomes chronic we have also contracture deformity of the affected extremities athetosis, occasional epileptiform convulsions and feeblemindedness.

As already stated the aforementioned acute symptoms are generally not of very long duration. With absorption of the excessive exudate in the spine and brain and the resulting reduction of pressure upon the vital structures there is a spontaneous tendency on the part of the nerves and muscles to regain their functions. The fever and pain begin to subside and the spread of the paralysis is arrested. The degree and extent of the initial paralysis form no criterion as to the final outcome of the disease as a whole. The author has watched many children seemingly in a hopeless condition to recover almost completely, and, vice versa, mild localized paralyses to persist

for life under the very best methods of treatment. The muscles that fail to recover in about three weeks after the onset of the paralysis begin to atrophy —the limb becomes flabby, cold and cyanotic. The response of nerve and muscle to the faradic current is soon lost, but the galvanic irritability may persist for many months longer. Owing to the laxity of the affected muscles and their inability to hold the articular ends of the bones in apposition, the joints soon become subluxated and with the trophic changes continuing, the limbs lose their shape, often look like mere skin and bone, and even the bones become retarded in their growth. Furthermore, owing to the activity of the intact antagonistic muscles sooner or later diverse deformities make their appearance which remain a source of everlasting misery to the unfortunate victims.

Typical spinal poliomyelitis with sudden flaccid paralysis, especially when occurring during the prevalence of an epidemic, is readily diagnosed even by the inexperienced. When, however, the case appears isolated and pain, for example, forms the chief complaint, poliomyelitis may in the initial stage be mistaken for scurvy, rheumatism or polyneuritis. On careful scrutiny of the presenting symptoms we generally find in scorbutus a history of the slow onset, tumefactions along the long bones, ribs and skull (if need be confirmed by röntgen ray), sponginess and bluish, hemorrhagic discoloration of the gums, and immobility of the extremities as a result of pain and tenderness but not of actual paralysis. In rheumatism also the immobility of the extremities or certain groups of muscles is the direct result of pain and swelling, both of which symptoms showing a great tendency to change their position. Furthermore, rheumatic fever is not rarely complicated by chorea, and endocarditis or pericarditis. The differentiation between a sporadic case of poliomyelitis and polyneuritis often presents great difficulty. In both of these affections pain and paralysis are predominating symptoms in the early stages, and unless there be a history of exposure to poliomyelitis in the one or a history of metallic poisoning or serious infectious disease, especially diphtheria, in the other, I hardly believe that in the early course of the disease one is able to arrive at a definite diagnosis. At a later stage symmetrical paralysis without early recession speaks for polyneuritis, while muscular atrophy for poliomyelitis.

Fig. 1.—Ballooning of the affected muscles.

Fig. 2.—Scoliosis in infantile paralysis.

Fig. 3.—Pontine type of paralysis.

Considerable difficulty is experienced also in distinguishing poliomyelitis from postdiphtheritic paralysis in which the neck and trunk are involved. In such cases attention should be directed particularly to the presence of paralysis of the soft palate, loss of accommodation of the eyes and strabismus which are of rather common occurrence in postdiphtheritic paralysis. On several occasions the author has met with poliomyelitis affecting the laryngeal and respiratory muscles which were erroneously diagnosed and treated (by means of antitoxin and intubations) for laryngeal diphtheria. Such errors can readily be avoided by close scrutiny of the symptomatology and by a throat culture. During an epidemic of infantile paralysis diverse traumatic and tuberculous affections of the extremities lead to diagnostic errors, which can easily be eliminated with the aid of the röntgen ray. Sporadic cases of pontine or encephalitic types of poliomyelitis are frequently mistaken for genuine encephalitis or meningitis. On closer observation it will be noted that in meningitis eye symptoms and Kernig's and Brudzinski's signs appear early and the stupor is much more pronounced. Furthermore, paralysis appears earlier and is more marked in poliomyelitis. In lethargic encephalitis stupor and mask-like face and diplopia appear early and are characteristic, while paralysis of the extremities is usually absent. Some diagnostic aid is also obtained from examination of the cerebrospinal fluid. The latter taken during the early stage of the disease, and especially before the onset of the paralysis, shows an increased cell count with a low or normal globulin content. The lymphocytes predominate. After the first two weeks the cell count usually drops to normal and the globulin content is increased. The sugar content is usually higher than normal, in this respect differing from the fluid of tuberculous meningitis, in which the sugar content is mostly lower than normal. Of course, in tuberculous meningitis the finding of the tubercle bacillus is decisive in the diagnosis. In connection with the aforementioned symptoms the finding of a leucocytosis of from 15,000 to 30,000 with an increase of the polymorphonuclears is corroborative of the diagnosis of poliomyelitis.

With the establishment of the diagnosis our chief concern must be directed to the prevention of the spread of the infection to other children and to the possible arrest of the disease in the patient before irreparable damage

has been inflicted. We have not been very successful in either attempt, since unfortunately, thus far all efforts to isolate the infective agent of infantile paralysis and to produce an efficient antitoxin against it have proved futile, with due deference to the claims of several clinicians to the contrary. To confirm my view let me quote Simon Flexner (4), undoubtedly the highest authority on the subject today. "There is no such thing as artificially produced serum against poliomyelitis, although we have a filtrable virus from the nervous system of patients. We cannot use this material, however, to immunize large animals, such as the horse, in order to get the serum. On the other hand, in a recovered case, in monkey or man, there is for many months in the veins an antiserum which neutralizes the virus of poliomyelitis. Monkey serum cannot be used for man. The animals are too small and too prone to other diseases to utilize their serum. Some measure of success has been attained in using serum of recovered humans in the treatment of other persons." But it can be readily realized that such serum, obtainable as it is under great difficulties (except perhaps during a large epidemic of infantile paralysis), can hardly be utilized and depended upon as a therapeutic or preventive agent. Under the circumstances there is nothing else left but to employ general prophylaxis and symptomatic treatment. The patient should be isolated for about three weeks. All discharges from the mouth, nose and throat should be received on cloths or toilet paper and immediately burned. The feces and urine should be disinfected before their disposal. The sick room should be screened to keep out flies, mosquitoes and other insects. All those known to have come in direct contact with the patient should for a fortnight be carefully watched for suspicious signs of poliomyelitis. During this period of observation children should be kept from school. Cleansing of the nose and throat twice daily with a two per cent. dioxide of hydrogen solution is worth trying in view of the fact it has been shown experimentally to arrest the activity of the virus of poliomyelitis. The same is true of the internal administration of hexamethylenamine, since it has been shown that it finds its way in the cerebrospinal fluid and exerts a germicidal effect. Fifteen grains daily in divided doses usually suffice for this purpose. The milk intended for infants should be preferably boiled.

The active treatment of poliomyelitis during the acute stage consists principally of absolute rest of body and mind and the relief of complicating symptoms as they arise. The patient should be kept in bed in recumbent posture, for about two weeks or longer if acute symptoms persist. Many years of observation have convinced me that the salicylates are actually of curative value in the early stages of the disease. They may be preferably combined with hexamethylenamine, and continued for about a week. Their depressing effect can be overcome by means of digitalis or strychnine, the latter being useful also as a general nerve stimulant. Warm baths, with or without mustard, also act beneficially, both as a nerve sedative as well as a diaphoretic, relieving the system of a certain amount of toxins. Two or three baths in twenty-four hours usually suffice. In undue restlessness the bromides with a very minute dose of codeine will prove very salutary. Lumbar puncture is a sovereign remedy where symptoms of brain pressure, more especially recurrent convulsions, predominate. It may be employed once or twice a day, with the patient in recumbent posture. As soon as the recovery of the affected muscles begins to manifest itself, it is imperative, in order to prevent early muscular contractures and deformities, to immobilize the parts involved. Well padded wire splints for the extremities and a Bradford frame for the spine answer the purpose admirably. The feet should be supported at right angles to the legs. Of course, when the paralysis is definitely established the selection of suitable braces must be left to the good judgment of the orthopedist, always bearing in mind the fact that the less burdensome the apparatus the better for the patient. Early muscular atrophy and deformities may, in a measure, also be prevented by improving the impoverished circulation in the affected structures by means of heat, massage, vibration and electricity. This treatment should begin after the pain and tenderness have entirely ceased. The massage should be gentle, local as well as general, and applied preferably by a professional masseur. Later the massage may be supplemented by light vibratory stimulation. Heat is always indicated in these cases. The patient should be very warmly dressed, and the affected limbs should be exposed daily for ten minutes at a time, to dry heat obtained from a large electric bulb or the numerous violet ray or baking apparatuses on the market. The benefits derived from the use of electric currents has been greatly exaggerated, yet a mild faradic and galvanic current, applied daily for from five to ten minutes, may serve well to hasten muscular recovery by improving its nutrition and promoting conduction of nerve impulses. The consensus of opinion of the profession is at present in favor of getting the patient in a sitting and, if possible, in an upright position soon after the acute stage of the disease has subsided and suitable braces obtained. Where the upper extremities remain unaffected the use of crutches is of great help. At about the same time it is recommended to begin with muscle training, i. e., passive and active motion corresponding to the normal muscular action. This therapeutic measure yields the greatest benefit if executed by one thoroughly familiar with the normal and abnormal powers of each muscle or group of muscles. Otherwise, by exercising the muscles in the wrong direction, considerable harm will be done. It will sometimes be noted that where patients show no muscular power, when put in a warm bath, they are able to make slight use of the extremities, the buoyancy of the water apparently overcoming the heaviness of the limb. It is therefore often of advantage to do the muscle training while the patient is in the bath. Since, however, entire cooperation and attention is most essential to the success of the muscle training, it is quite obvious that these exercises are only applicable in children over three or four years of age. Ample nutrition and general reconstructive tonics, such as strychnine, the syrup iodide of iron and the hypophosphites and codliver oil, are excellent adjuvants in the reestablishment of the dormant bodily functions.

After following the aforementioned suggestions

faithfully for a year or longer without any appreciable benefit to the patient, and, on the contrary, there is a tendency of the deformities to become fixed, there is nothing else left but to proceed with the attempt to correct the deformities by operative measures. The profession is not agreed on the time when an operation becomes indispensable, it is therefore wise to leave the decision of this important question to the good judgment of the individual surgeon. It is well, however, to bear in mind that the surgeon need not be consulted before giving the aforementioned therapeutic measures a very careful and prolonged trial. Furthermore, it is most important to remember that the success of the operative procedures often depends solely upon the skill of the surgeon. Hence the urgency of selecting one thoroughly familiar with this specialty. Of course, even in the best of hands the results are not invariably good. This is true especially of cases which have been greatly neglected or treated by the numerous quacks and fanatics who are forever on the alert to take advantage of the ignorance of the people at a time when their distress and fear is greatest.

Since writing this paper I have had the opportunity, through the courtesy of Dr. I. Lehman, to see the following extraordinary case. The patient, a robust boy about five years old, took suddenly sick with vomiting, diplopia and paralysis of the lower extremities and the left side of the face. Gradually the paralysis extended to the respiratory muscles, and the child died on the sixth day of the disease from respiratory failure. Laboratory examination of the cerebrospinal fluid showed the typical picture of poliomyelitis.

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Relationship of Infant and Crude Mortality Rates

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A recent article showed that irrespective of conditions, the infant mortality rates for some countries, for districts or cities in those countries, was rather exactly made up of three constants (1). Based on the observations of Brendt and Findlay (2), one constant corresponded to their rock bottom irreducible. A new observation was deduced, namely, that such an irreducible differed according to the sex. That for the male was twenty-five while that for the female was lower by at least five.

A second constant related to filth borne diseases as estimated by mortalities from infant diarrhea and enteritis. The constant for such was 1.23. The third constant related to the respiratory diseases as estimated by mortalities from influenza, measles, whooping cough, pulmonary tuberculosis, lobar and bronchopneumonia, and bronchitis. The constant for such diseases was 2.3. Deriving such constants from the statistics of Brendt and Findlay we found reported and estimated infant mortality rates that were as definitely in agreement in the registration area of the country, the States and of cities as the statistics of such areas were free from unknown and illdefined causes of mortalities. Further it was evident that the possibility presented of both checking up incomplete registration of births and of listing unknown and illdefined mortalities into the scheme to advantage.

A table recently published by the Census Bureau strikingly illustrates these points. This table is given on the next page.

The following opportunities are presented by the table: a, the slight discrepancies between reported and lower estimated rates as in the cases of Ireland and Australia are possible evidence of incompleteness of registration of births; b, the only instance of excessive estimated rates over reported rates in the case of Scotland would point to examination of the reason for the markedly disproportionate rates for whooping cough as compared to the other countries, in comparison with all other specific respiratory rates; c, the evidence that the specific rates for diarrhea enteritis in Australia are higher than in two other countries (sustaining our contention that the low mortality rates are by virtue of continued extremely low respiratory rates; also indicative of lesser yearly variations in rates, one point of argument of this paper); d, the markedly disproportionate estimated and reported rates of Chili. Examination of the unknown rates for the latter country shows for males 34.2, and for females 31.2. Inclusion of these as respiratory corrects the estimated rates for males to 250.2 and for females to 242.5. The balance might well be one of incompleteness of registration of births. A no less important practical point not yet indicated in print would seem to point to the fact that influenza-pneumonia was epidemic for that country as early as 1917. On record that statistics tend to show that congenital debility would ever seem to be a waste basket for respiratory infections (3), the rates for that condition for Ireland and for Chili are suggestive. For Ireland the rates for males was 28.4, for females 24.3 as compared to the rates for Chili of 112.2 and 104.3.

Based on the statistics of Brendt and Findlay, that the same factors making up the excess of mortality over bed rock for the first month of life are part and parcel of the mortality rates that continue throughout life, we were able to show that such was statistically evident (4, 5). In other articles we have shown the apparent relationship between infant mortality rates and crude mortality rates. The opportunity of furthering such a premise in a practical way may do much to place in the hands of the medical officer of health the possible factors concerned in the yearly variations of infant mortality rates. This is the more important for the reason that more widely than ever, social economic factors alone con-

INFANT MORTALITY RATES, 1917, AND SPECIFIC RATES

	U.S.A.		Eng.-Wales		Australia		Ireland		Scotland		Chili	
	M*	F**	M	F	M	F	M	F	M	F	M	F
Measles	1.3	1.1	3.1	2.3	...	...	1.3	1.1	4.6	3.7	5.2	5.9
Whooping cough	2.2	2.5	2.4	3.0	1.6	1.3	2.5	2.7	8.4	8.6	9.7	12.2
Influenza	.9	.7	.4	.3	...	...	.7	.5	.2	.1	5.6	4.6
Tuberculosis	.6	.5	.4	.4	.1	.1	.6	.5	.4	.4	.9	1.1
Bronchitis	2.4	2.0	9.6	7.3	1.5	1.0	10.8	7.8	9.3	6.7	1.5	1.4
Pneumonia	4.7	3.7	2.9	2.1	2.2	1.3	2.0	1.5	3.6	3.1	26.3	24.6
Bronchopneumonia	9.3	7.3	10.3	7.5	2.3	1.9	5.4	4.9	10.1	8.3	2.7	2.8
Diarrhea enteritis	22.0	18.0	11.4	9.1	11.7	9.1	10.6	8.8	10.9	9.2	22.3	20.9
Reported I. M. R.	103.7	83.3	107.6	84.9	63.3	48.1	96.1	79.1	117.8	96.6	277.3	261.0
Estimated I. M. R.	101.3	83.1	106.0	82.9	57.1	45.0	91.6	72.7	122.6	102.4	171.8	166.7

*Male **Female

tinue to hold the stage to the detriment of more exact determination of such variations both by years and of race stock.

We present for consideration of the points at issue the following graphs for three cities, those other than this city being our neighbors whom we constantly use for statistical comparison in the endeavor to elicit facts. The rates in all cases for the period 1910 on (1921-1922 excepted), are those of the Bureau of the Census: those previous to 1910 and 1921-1922 are from city year books or correspondence. The comparative respiratory and filth borne rates are those of the crude mortality rates and have been previously published (5). In order that such curves may be brought into the easiest comparative view with the infant mortality rates, the respiratory field is magnified ten times (per ten thousand of population) and filth borne field is magnified one thousand times (per one million of population). The graphs are as follows:

The usual striking agreement of infant mortality curve with that for the filth borne curve (typhoid-infantile diarrhea content), may be seen to be less so during certain periods of years previous to 1906 and rather continuously so since that year in the case of this city. Examination of the discrepancy at the time that the respiratory field does not interfere is notably seen during 1901. Examination of the statistics shows that the excess of the filth borne curve is one entirely of typhoid and had that disease had the same rate as for the immediate previous years, such a peak as exhibited in 1901 for a filth borne field would more nearly have been an inverted one of at least half a decrease in place of the increase, thus bringing the lower infant mortality rate in harmony with the year's decrease in both respiratory and filth borne disease in so far as infant diarrhea was concerned.

A factor to be determined is the one or more causes which account for an increased infant mortality rate in the event of a well marked decrease of filth borne disease. For example, why should it be that with rates for 1888 and 1893 approximately equal there should have been a decrease of filth borne disease of 27? The same phenomena occurs in contrasting 1917 and 1920. Examination of the increased respiratory curve shows that it is made up of epidemic measles and increased pneumonia. Similarly if we take the increased infant mortality rates for those years where the filth borne is but slightly increased, such as 1895 compared to 1894, 1906 as compared to 1905, 1922 as compared to 1921, the same factor of measles epidemics holds true. Such a factor even holds true in explanation of the slight decrease of infant mortality in 1891, 1893, 1903, where a very decided increase of filth borne disease occurred. Measles epidemics are again a possible factor. It even occurs in 1896 where despite a lower respiratory and filth borne field than the previous year the infant mortality rate is higher. If we take those years of high frequencies of pneumonia with low or absence of measles, 1890, 1907 and 1910 for example, lower or higher filth borne disease curves are approximated by infant mortality rates. Indeed, the year 1918 is the only exception. In the latter instance and to an inconstant degree in other years (difficult to separate from measles influence), it may be that whooping cough enters as an influencing factor.

As previously expressed, the reader would understand that with decreased filth borne disease, the specific disease measles, whether the actual respiratory field was increased or not, was the causative factor in increased infant mortality rates. Such is not the case, I believe, as may be shown by measles mortality under one year of age. The factor is rather, that factor so complicating measles as to cause fatilities, namely, streptococci. Such an event, causing as we have shown, primary disease, even pneumonias, accounts for the exception named in 1918.

Study of the similar graph for Bridgeport shows the same essential features: lowered infant mortality rate in 1901 by virtue of lower filth borne disease (diarrhea) in children under two years of age (an increase for typhoid); incommensurate decrease for 1903 compared to decrease of filth borne by reason of measles; repeated in 1906 and 1914; unaccom-

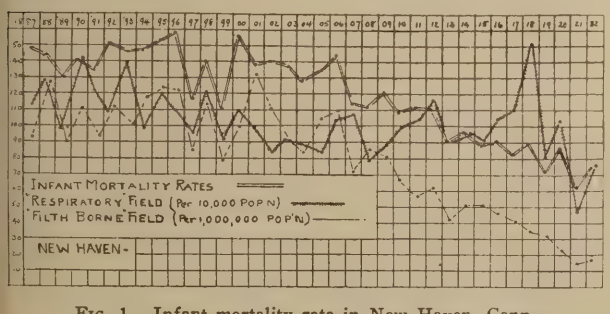

FIG. 1.—Infant mortality rate in New Haven, Conn.

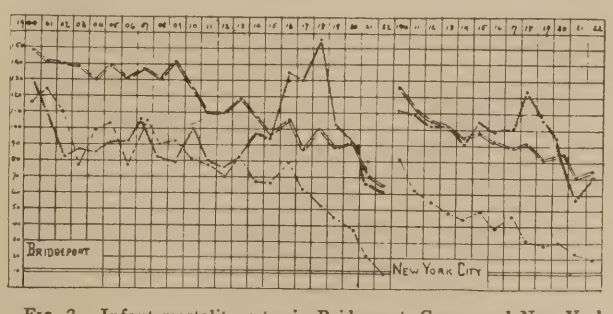

FIG. 2.—Infant mortality rates in Bridgeport, Conn., and New York.

panied increase from pneumonia in 1910 and 1914, 1918 excepted. With practically identical infant mortality rates in 1903 and 1907, in 1904 and 1906, the high measles frequencies would seem the influencing statistical factor.

The graph for New York City would show better could it be resolved into the various constituent boroughs. Notwithstanding, the year 1918, like 1922, was notable for the highest measles rates since 1909. Increased rates for infant mortality with decreased filth borne field are in accord with the graphs for the other two cities. There is one interesting year, 1916, where an abnormally high rate as reasoned by respiratory and filth borne fields exist. A similar one appears for New Haven in the year 1887. The factor of incompleteness of birth registration would be reasonable. If found true, medical interpretation of such graphs would be of yet greater value in checking results.

To the advantage of the medical officer of health is the following. There are occasions where the frequencies of gastrointestinal fatalities are epidemiologically a part and parcel of meningitis, poliomyelitis, encephalitis, and tuberculosis. With lower estimated rates than recorded, we may, to the advantage of conquest of frequencies of such respiratory disease recognize in future such frequencies as a part of some epidemic respiratory disease.

In the main then, we would question whether the conduct of infant welfare in the past ten years more or less of evident excellent control of the filth borne diseases, has gained proportionately. Frankly speaking, have the increased social and economic principles gained the expected results? Are not the results those of cyclic frequency of diseases, respiratory in origin, which diseases are the concealed influencing factors rather than such social and economic factors. Such concealed factors are statistically, year after year, more rationally of influence irrespective of country or district.

From an epidemiological point of view, with consideration of the biology of life as pictured by Pearl, from the history of man, as reflected by vital statistics, a synthetical problem of infant mortality is as follows. Normality or otherwise of the fetus and of the infant is primarily a hereditary normality or otherwise of any or all of the three systems of the human body, namely, the gastrointestinal tract, the respiratory system and the central nervous system. From the influences of maternal infections during fetal life, from the environmental influences of filth borne and respiratory diseases from birth on, may we not find that the selective action of a pathological germ is by reason of defective system. Whether primary or secondary, the variant systemic involvement in the different members of a family at the same or at different periods would fit epidemiological facts. There further may be involved the question whether such defective body tissues are alone hereditary or whether maternal infection during any particular part of pregnancy may as well play a part.

To sum up, yearly variations of infant mortality rates in cities where socalled standard measures for its reduction have been effective for years without decreasing such variations, statistically as well as epidemiologically, would seem to be influenced by the respiratory factor of the crude mortality rate.

Addenda: The following suggestive fact gained since writing this article may well be added at this time. It will be noted that Bridgeport alone of the three compared cities had a lower infant mortality rate for 1922. Both New York City and New Haven had measles epidemics and pneumonia frequencies in 1922, Bridgeport recording their measles epidemic in 1923. For the first six months of 1923, both New York City and New Haven have had a fourteen per cent. reduction in gross deaths under age one, whereas Bridgeport has had an eleven per cent. increase, as compared to the similar six months' period, 1922.

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Abdominal Pains in Children Beyond the Age of Infancy*

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I know of no symptom which may be more obscure in its etiology than colicky abdominal pain in childhood. In discussing the causes of abdominal pain I am not including any of the referred pains in the abdomen due to acute conditions, such as pneumonia, appendicitis, tuberculosis of the spine, obstructions, and others, but shall try to discuss those pains of which so many apparently well children will complain. The commonest cause, as in infancy, is some form of indigestion, particularly in those cases where the movements contain large amounts of mucus.

The child who suffers from this condition is usually losing weight, his lower eyelids are somewhat puffy or there are dark rings under the eyes, he sleeps badly, is restless and grinds the teeth or talks in his sleep. In the daytime he is unusually nervous, his stools show an excess of mucus, and he complains of pain in the abdomen, which only lasts about a minute, but is severe enough for him to become pale in the face and sometimes to cry out.

*Read before the Samaritan Hospital Medical Society.

These symptoms will repeat themselves many times a day until corrected, if ever diagnosed.

Another common cause of abdominal pain is undigested vegetable matter in the intestine. The stools in these cases are large and show large pieces of undigested fruit or vegetables. It must be remembered that children are likely to swallow their food without mastication, and a vegetable substance, if not thoroughly broken up in the mouth, undergoes but little change in the intestines, causing it to act as an irritant. An examination of the stools of children, complaining of abdominal pain, will at once furnish a clue to the diagnosis and the proper line of treatment.

The teeth should not be overlooked as a possible cause, as where they are defective, and the child is unable to masticate his food, you will have a cause for abdominal pain.

To cite an instance: R. G., aged seven years, was brought to me suffering with severe pain over the lower abdomen for six months. A diagnosis of chronic appendicitis was made and operation advised. The appendix was removed and was found to be inflamed, but the child continued to suffer with the pain until the teeth were treated, when this symptom entirely disappeared.

Next to digestive disorders perhaps the commonest cause of slight pain in the abdomen is the presence of the threadworm, which, although small to produce a mechanical irritation, will cause an excess of mucus to form and that accounts for the pain. Also, such intestinal parasites as the roundworm, tapeworm, and hookworm should not be overlooked, as they are often the causes of abdominal distress.

Another cause is simple constipation, particularly in the child under six years. In the very young child, constipation is an exceedingly common cause of colic, but as the child grows older, this condition improves, as the nervous instability tends to diminish, and consequently bowel action improves. This would bring us to the subject which some writers refer to as the nervous bowel, where the child suffers from a nervous diarrhea, in which the taking of food is almost immediately followed by colicky pain in the abdomen and an urgent desire to defecate, although the stools may not be loose and the child may be free from any such symptom between meals. This condition is closely associated with nervous excitability as almost always the child is nervous, suffers from night terrors and talks in his sleep, enuresis usually being associated. The colicky pain which is started by food is followed as a rule by evacuation of the bowels, though not always.

Sometimes at one meal the child complains only of the abdominal pain, while at another there will also be an urgent desire to defecate. Possibly in the one case the part of the bowel thrown into spasmodic contraction is higher up than in the other case, so that defecation does not result.

Another disorder in which one is tempted to suspect that pains in the abdomen may possibly be of nervous origin is cyclic albuminuria. A morning as well as a midday specimen of urine should be examined in these cases. The vague symptoms for which children suffering with this disorder are brought to the physician are often of a nervous character, such as headache, tired feeling, night terrors, flushing of the face and colicky pains in the abdomen. Children with cyclic albuminuria usually show evidence of digestive difficulties, resulting in excessive formation of gas, as I mentioned above, and in which colicky pain is a common symptom.

Renal calculus, while not a common condition in childhood, should not be overlooked. Two of my patients within the last year were shown to suffer from this, and this diagnosis being confirmed by the röntgen ray, they were finally relieved.

Case I.—M. K., ten years old, was brought to my offices with the following complaints: The child had attacks of vomiting and pain over the abdomen. After having many attacks he was relieved of his pain, until one day it returned and was accompanied by difficulty in passing urine. After twelve hours of severe pain he passed a small calculus. A second patient was not so fortunate, as the stone was lodged in the ureter, and finally passed into the bladder, from which we are still waiting for its passage.

While we are on the subject of kidney, we might also mention movable kidney, as a cause of abdominal pain.

Case II.—A. G., four years old, had severe abdominal pain, and vomiting. Her vomiting was so persistent at times that lavage, the intravenous use of glucose and sodium bicarbonate, the intraperitoneal administration of normal salt solution, sedatives, and other measures, had to be used, but with little result. When a movable kidney was discovered and kept in place, the symptom disappeared.

Biliary colic, which is supposed to be rare in childhood, should not be forgotten. One of my patients who had had many attacks, and many and various diagnoses had been made, was finally proved to have stones in the gallbladder, and the surgeon who operated on this patient still takes pride in the fact that the youngest patient he ever operated on for this condition was only nine years old, and was sent to him by me.

Tabes mesenterica or caseation of the mesenteric glands is a frequent cause of pain in the abdomen, though it is no easy matter to diagnose it, unless the glands are larger and firmer so that they may be palpated.

Frequent recurrence of pain with palpable glands in the abdomen generally indicates some adhesions between the glands and surrounding parts. For the same reason no doubt is the colicky pain which accompanies tuberculosis and peritonitis, and also during recovery from appendicitis, whether the appendix has been removed by operation or not. Last but not least it must be remembered that the earliest evidence of appendicitis may be vague pains in the abdomen, which are not severe enough to cause any alarm to the parents or even to the attending physician. These cases declare their nature by a sudden outburst of acute symptoms of appendicitis, and we all have seen too many of such cases diagnosed too late for operation.

I have grouped together the possible causes of the common complaint of pains in the abdomen. Though it is not always possible to arrive at a certain diagnosis in these cases, one can at any rate, by bearing in mind the various possibilities, exclude some of them in the particular case.

2009 Pine Street.

Appendicitis and Peritonitis Complicating Scarlet Fever*

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A rare incidence in scarlet fever is its complication by acute appendicitis and peritonitis which may develop during the eruptive stage or during the period of desquamation.

Several instances of this complication are cited in the literature. Kelly (1) speaks of the association of appendicitis with scarlet fever. He asserts that it is not yet determined whether the general infection acts as an exciting factor by preparing a suitable soil for the activities of the intestinal bacteria or whether the specific microorganism is the direct cause of the inflammation of the appendix.

He cites an interesting example: A boy, eight years old, was taken ill with a severe attack of scarlet fever accompanied by abscess of the cervical glands and three weeks later was operated on for acute appendicitis. Turk, while attending the patient, contracted an angina supposed to be due to scarlet fever and fourteen days later he had an attack of appendicitis. Blood from Turk was injected into a rabbit and on its death, streptococci were obtained from the heart's blood. Billings (2) notes the clinical coincidence of appendicitis with general infectious diseases, with attendant bacteriemia. Rosenow (3) by well directed clinical and laboratory investigation has shown conclusively that appendicitis may be the result of a bacteriemia.

Out of a series of five thousand cases of scarlet fever reviewed by McCollum and Place (4) peritonitis actually occurred in four. In these the attack of scarlet fever was not especially severe. Huebner (5) states that some general purulent cases of peritonitis, occasionally preceded by appendicitis, are met with in scarlet fever. According to Canelli (6), appendicitis is a rare complication of scarlet fever, only fifteen cases having been reported in the literature. He cites a fatal case in a child two years of age. Dunham (7) publishes a review of ten cases collected from the literature between 1903 and 1919 and reports a case in a girl five years of age in whom appendicitis developed two weeks after the beginning of an attack of scarlet fever. Sutton (8) mentioned a case of a young man of nineteen years who recovered without operation. McCollum and Blake (9) state that it is possible that mild peritoneal involvement may be found on careful examination to be more common than is at present believed. Tice (10), however, states that appendicitis and peritonitis complicating scarlet fever is an accidental association and believes that such observations are merely coincidences.

CASE REPORT

Case.—L. R., six years of age, was admitted to the Kingston Avenue Hospital on April 14, 1922. Examination revealed a fairly well nourished male child with a moderately severe scarlet fever infection. He showed a typical punctate erythematous eruption, congested throat and prominent papillæ of the tongue. Pastias and Rumple-Leede sign was positive. There was no nasal discharge. The ear findings were negative. The heart was rapid and regular with a slight systolic blow at the apex which was not transmitted. The lungs were normal. On admission, the temperature was 102.3°, pulse 120, respiration 24.

The disease was running a usual course until the fifth day after admission when the patient's temperature rose from 101° and fluctuated between 102.4° and 103.4°. Two days later the patient vomited and complained of abdominal pain which was generalized. He was more tender on palpation over McBurney's point. Muscular rigidity was marked on the right side. There had been no movement of the bowels during the two days prior to the attack of abdominal pain.

There were 12,000 white blood cells; polymorphonuclears, 84 per cent.; large lymphocytes, 12 per cent.; small lymphocytes, 4 per cent. Several specimens of the urine showed a faint trace of albumin and a few pus cells were observed at times.

The patient was operated on the second day after the onset of abdominal pain by Harold K. Bell. A localized mass was found in the appendicular region from which about two ounces of pus escaped. The appendix was found dipping over the brim of the pelvis, the distal two thirds greatly distended and actually inflamed with a perforation near the tip. The appendix was removed and drainage instituted.

The boy's convalescence was delayed by an attack of measles. On June 1, 1922, his wound was entirely healed and he was discharged twelve days later in good condition.

*From the Kingston Avenue Hospital, Department of Health, New York City.

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Seasonal Curves in Mental Disorders*

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The observation of seasonal curves as climatic factors in the occurrence of mental disorders was first studied in Continental Europe, over fifty years ago. Only since 1886, however, have data been compiled which show maximum and minimum curves covering various forms of mental disorders. Suicide is included in these curves, for the reason that in the majority of cases, it is evidence of the presence of mental disorder. Sufficient data are now available to warrant the belief that mental disorders occur in seasonal curves and that climate has potential values in their incipiency and recurrence.

One of the graphs, which I have prepared, presents statistical data of first admissions and readmissions in some of the State Hospitals for the Insane in our country. This graph is representative of our country as a whole, as it is really a cross section including institutions extending from the extreme East to the extreme West, the data being compiled by the statistician of the National Committee for Mental Hygiene. It will be noted that the maximum curve is attained during the months of March, April, May and June, and that there is a gradual decline from June until October, when the minimum curve begins and reaches its height in November. Then follows a gradual decline until February, when again a regular and unbroken curve is shown, which reaches its maximum in the spring months. We always have a rise in the spring and autumn.

The spring rise differs in height and duration. It may reach its maximum height in March but is continued through April, May and June. If the maximum height is delayed until May or June, the duration of this height will remain approximately the same; the gradual decline not commencing until July. The minimum or autumnal curve may reach its height in September. If so it will be of longer duration than if it is delayed until October or November. If we could have a graph showing all first admissions and readmissions for a period of twenty-five years, then I am sure all local or accidental factors would be removed. We would then have a true cross section, showing the maximum and minimum seasonal curves for our country.

I will show my own observations extending over a period of twenty-two years. While the numbers are not over three thousand, yet the seasonal curves are in evidence. Massachusetts, New York and more recently Illinois are now giving scientific statistical study to the problems of insanity, and graphs from New York, Massachusetts and Illinois are presented herewith. The one from Illinois is taken from the first published report of the recently organized department of statistics. Then other slides will show the annual incidence of insanity in London, the curve of annual incidence of paresis in Paris, and the suicide curve in London. These graphs are from studies in the *Psychology of Sex* by Havelock Ellis.

The interpretation of seasonal changes in the human organism belongs both to the meteorologist and the physiologist. Much constructive and definite observational work along this line has been done by one of your members, Huntington. It was while reading his contributions as they appeared in *Harper's Magazine* that I became interested in his seasonal efficiency curves. The fact that they parallel the seasonal curves of mental disorders created an opportunity for clinical analysis of the problems presented. I have prepared a graph of Huntington's findings showing the efficiency of factory operatives in which the maximum and minimum curves have relative correspondence to the mental graphs. The graph also shows seasonal changes in mental and physical activity have corresponding spring and fall variations.

The similarity of these various curves from the viewpoint of a clinician, means that there are common environmental factors concerned both in promoting the highest degree of efficiency and in the production of physical exhaustion, the chief underlying factor in the causation of mental disorder. That common factor is climate. The human periodicity of efficiency corresponds with the human seasonal periodicity of mental disorders.

Mental disorders are regarded as affections of the brain with predominating, but not exclusive, psychic

*Read before The American Meteorological Society, at Cincinnati, Ohio, December 29, 1923, and the Chicago Neurological Society, March 20, 1924.

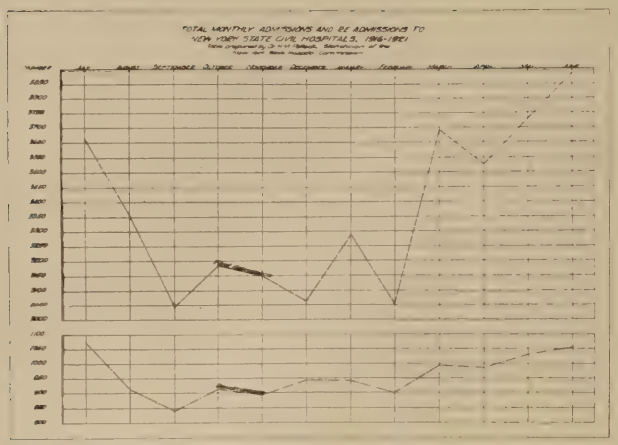

Fig. 1.—Total monthly admissions and readmissions to New York State Civil Hospitals, 1916-1921. Table prepared by Dr. H. M. Pollock, statistician of New York State Hospital Commission.

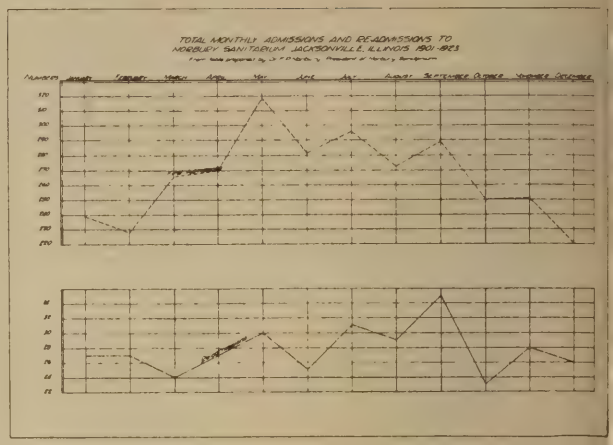

Fig. 2.—Total monthly admissions and readmissions to Norbury Sanitarium, Jacksonville, Illinois, 1901-1923. From table prepared by Dr. F. P. Norbury, president of Norbury Sanitarium.

symptoms. They are more inclusive than the groups included under the term of insanity. Insanity is a legal term and, as such, it has to do with the competence of the person to manage himself and his affairs.

Psychiatry must consider all factors which enter into the clinical problems. As a result, Lugaro says, it is seen that "psychiatry touches upon and embraces all of the most intricate problems of biology and medicine and contains many others which belong to it exclusively." The human body is an automatic self regulating machine of "unfathomable complexity and extreme plasticity" acted upon from within and from without by varied and innumerable stimuli. Further, man, like all living animal and vegetable life, possesses adaptation of each part of the living being to the whole, and the whole organism to the environment in which life exists.

The phenomenon of adaptation is fundamental to the biological conception of life. In man the question of adaptation is increasingly heterogeneous. Climate and food are obviously the most important of the environmental factors concerned in man's adaptation, his maintenance as an individual and for the preservation of his species. The laws of selection, adaptation, conflict and others, concerned in social evolution, when applied to our biological problems reveal to us the importance of climate, food and physical fitness in survival of the stronger and with the quasi elimination of the weaker or less fit.

Mental stability is man's greatest asset in meeting the problems of everyday life. The correlation of mind and body need not concern us here. Mental disorders have their inception and are kept going "because certain pathways along which morbid ideas, doubts and fears tend to pass are fixed and the inertia of the nervous system to old connections and associations are not interrupted but allowed to persist and no new pathways are made."

The dysfunctioning to which morbidity of mind is due is found, primarily, in the phenomena of exhaustion. The exhaustion may be in the lack of potentials in the stock. It may be acquired, therefore individual and due to any one, or their combination, of the great number of causes of exhaustion. It is not easy for man to realize how much he owes to the restraints and supports of the social fabric in which he is an element and which, like the atmosphere, always and insensibly surrounds him. These factors contribute likewise to his undoing, when exhaustion enters to contribute to inability to meet the demands placed upon him.

Exhaustion is a fact and not a fancy in being the primary factor in the etiology of mental disorders. A simple definition of exhaustion may be expressed

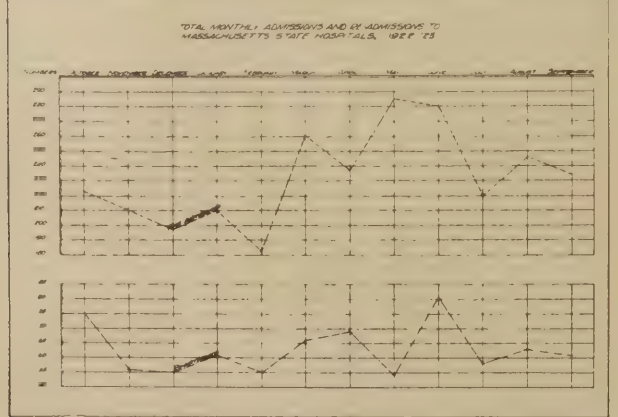

Fig. 3.—Total monthly admissions and readmissions to Massachusetts State Hospitals, 1922-23.

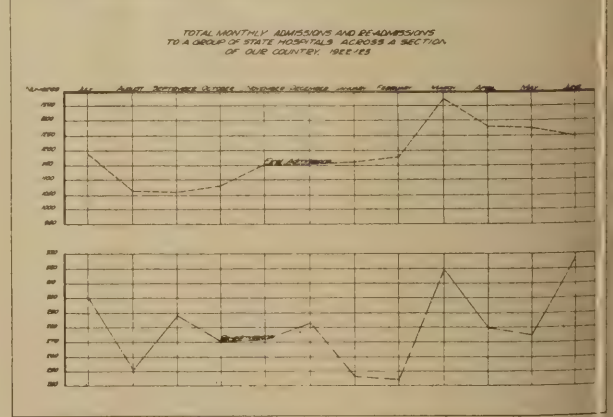

Fig. 4.—Total monthly admissions and readmissions to a group of State Hospitals across a section of the United States, 1922-23.

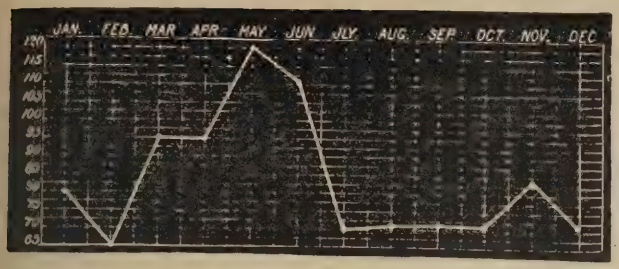

FIG. 5.—Curve of the anuual incidence of insanity in London.

FIG. 6.—Curve of the annual incidence of general paralysis in Paris (Garnier).

as follows: A diminution of muscular and intellectual power and accompanied by inability of the individual to respond to stimuli. Abnormal fatigue is first in evidence. This may lead to mental disorders, which Dercum calls the "fatigue neuroses," which, as entities of disease, have definite clinical value. To understand the clinical pathology of exhaustion and its contributions to clinical psychiatry we approach our problems along the line of physiological, chemical and psychological inquiry.

Crile emphasizes the fact that man has not been presented with any new organs to meet the requirements of present day civilization; indeed, not only does he possess organs of the same type as the savage, but also, the same type as those possessed by the lower animals. It is largely through the emotions that mental perturbations receive their stimuli. Cannon has shown that these mechanisms are through the autonomic nervous system. Under the continued stimulation of the primary emotions, fatigue, exhaustion and death occur, due to the fact that exhaustion is central in origin; that is, primarily within the brain.

The clinical pathology of exhaustion is always the same, however produced. Exhaustion begins and ends in the cells. The cells involved are those concerned in converting potential energy into kinetic energy, viz: the brain cells (the central power house), the thyroid, adrenals and liver cells. All of which have integrative and supporting action in directing and controlling the mechanistic activities of the body. In order to grasp fully the mechanism of exhaustion the phenomena of sleep must be considered.

Sleep is nature's restorer in the rehabilitation of cell functioning. While the phenomenon of sleep has not been solved, yet the research work of Crile has shown it is due to some physicochemical process and clinically speaking, he says, that exhaustion is not overcome without the intervention of sleep. Crile insists that sleep and sleep alone can accomplish restoration of the original condition of cell life.

There is a constant relationship between exhaustion and certain physical changes in the cells of the brain, thyroid, adrenals and liver, as proved by Crile. The fact that restoration takes place by timely intervention of rest and sleep emphasizes the importance of the rhythmic factor in the physical activities of the body. The rhythmic factor is concerned in the electrical conductivity and processes of the cells. Crile says that in every case of exhaustion there are changes in conductivity with corresponding histological changes in the cells.

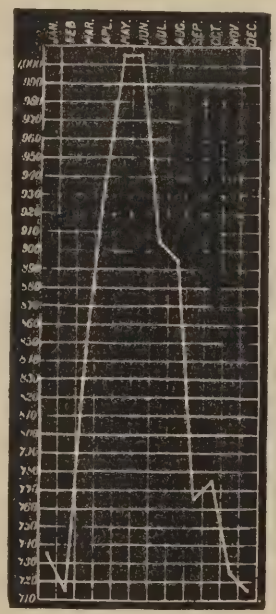

FIG. 8. — The suicide rate in London.

The human body, in its electrochemical mechanisms is responsive in health and in disease to the laws of physics. During sleep the battery (the brain) is cleaned, and recharged with potential nervous energy. The reverberation of these powerful charges throughout the nervous system when supported by the body viscera contribute to the joy of living. The degree of well being depends on nervous tension and harmonious adjustment of all integrative rhythmic physiological functioning. This harmonious adjustment is the foundation of mental equipoise and contributes to fair dealings with self and the outside world. Harmonious adjustment is individual, being interwoven with personality, character and the inherent reserve or the individual's capitalization of potential nervous energy. There is a diurnal rhythmic variation of this reserve which we all experience. Our best hours for work are in the morning after a restful night when sleep has cleaned and charged our cells. As the fatigue products enter to inhibit the output of nervous energy and lessen its tension bodily work diminishes. We are less in-

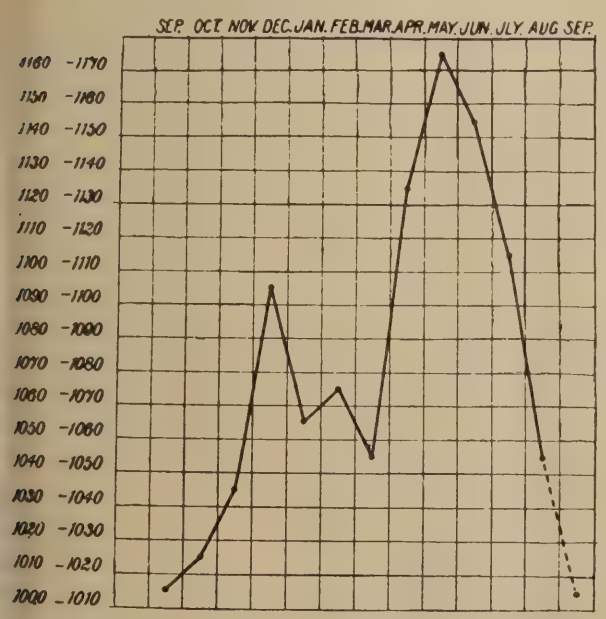

FIG. 7.—The annual curve of the conception rate in Europe.

clined to exertion and more to repose, less confident and more conservative as night approaches. Ordinary or normal fatigue is responsible for the inhibitions and lessened response to stimuli. Abnormal fatigue means inadequate readjustment and accumulated inhibitions with the way opened for the more profound clinical manifestations of exhaustion.

There are longer intervals than the diurnal tides which affect bodily activities. Days and perhaps weeks or months may go by when our output of nervous energy meets all demands; when strenuous efforts are really enjoyed and the difficulties which confront us are surmountable. On the other hand, there are rhythmic periods of "blue Mondays" when weariness, depression, low nervous tension prevail and contribute to lessened output of work and a disheartened mental attitude. In both conditions bodily fitness to respond to stimuli, to the waves of energy from within and from without, is accompanied by reactions in conduct, which are registered as mental accompaniments with varying feeling tones. This rhythmic physiological impress both normal and abnormal includes all functions of the body, even to the smallest capillaries of the vascular system.

It is through the integrative action of the nervous system that rhythmic impress is made. Havelock Ellis says, the general tendency, physical and psychic, of nervous action to fall into rhythm shows a biological predisposition to accept any periodicity that is habitually imposed upon the organism. Man is responsive to the daily cycle, to weekly, monthly and seasonal cycles, as to his output of work, his mental equipoise and his well being.

Climate with its seasonal variations thus enters into the problems of clinical medicine. Climate variations, as shown by Huntington, are factors in industry, education and civilization itself. He has not applied study of climate to the conduct curve of man as a social unit in the problems of social evolution.

It is this conduct curve which encircles us in the problems of mental disorders. Climate, with its seasonal changes, is responsible for the shifting of metabolic processes, and the seasonal periodicity which enter into the growth and development of children and the shifting from the ordinary grooves of conduct of childhood to the reproductive channels (psychosexual) of the adolescent. There are many facts to show that psychosexual activity is greatest in early spring and late autumn. Further, the conception curve, according to Ellis, is highest in April, May and June of the spring months and again strongly worked in November. Ellis concludes that the sexual rhythm is a physiological reaction to the cosmic influences of the earth's seasonal rhythm.

Another interesting seasonal observation, which Ellis says is not accidental coincidence, is in the mortality of children under one year of age. Children born in February and September and, therefore, conceived in May and December appear to possess the greatest vitality, and those born in June and, therefore, conceived in September have the least vitality. May and December are precisely the periods when conceptions are at their maximum and September is precisely the period when they are at a minimum; so that, if the coincidence is not accidental, the strongest children are conceived when there is the strongest tendency to procreate, and the feeblest children when the tendency is the feeblest.

This factor may, in my judgment, represent the endowment which the child brings with him into the world, which is to function with environment and circumstance in his conflicts in everyday life.

It is to be said that mental disorders are not the only clinical entities produced by exhaustion affecting the neural mechanisms in which seasonal curves are to be noticed. Some of the varied infectious diseases have exceptional potential toxins which are intense nervous poisons and produce direct and indirect pathological conditions, recognized as disease entities. Inasmuch as infectious diseases owe their existence to pathogenic bacteria and the incidence of such diseases are dependent upon seasonal variations, modern research workers are now endeavoring to correlate the presence of such diseases with varied seasonal virulence of pathogenic bacteria.

Before the Mayo Clinic, Rochester, Minn., Nakamura recently reported a study extending over a period of one year of bacteria isolated from diseased tonsils, the tonsils being removed because they were believed to be the foci of infection in patients suffering from various diseases. The study revealed marked variation in the types of streptococci from week to week, but more marked according to the season. The curves brought out conclusively a seasonal variation in the virulence of these disease producing agencies. Rosenow, in discussing the paper, said the increased prevalence of tonsillitis during the winter months may be due more to climatic conditions than to contact infection. Again, many of the mental and nervous disorders are of post infectious origin and called the sequelæ of such diseases. The lessened resistance, with the personal equation of nervous predisposition, contributes favorable soil for the development of the mechanism of exhaustion, and explains, too, one of the reasons why mental and nervous conditions, as sequelæ, follow the seasons when infectious diseases are most prevalent. Climate again enters as a responsible causative factor in mental and nervous disorders.

Huntington says "man is more closely dependent upon nature than he has realized. A realization of his limitations is the first step toward freedom." And again, "If we can conquer climate, the whole world will become stronger and better."

CONCLUSIONS

1. Climate is a formidable and integral part of human energy.
2. The output of human energy (the efficiency curve) has climatic seasonal variations (Maximum curve in the spring, minimum curve in the autumn).
3. Exhaustion of human energy with its very varied phenomena as represented in disease entities has climatic seasonal curves.
4. Exhaustion of human energy is the chief and most formidable causative factor in all forms of mental disorders.
5. Mental disorders in their incipiency and recurrence parallel the efficiency curves of Huntington (Maximum in the spring, minimum in the autumn).

6. The common factor of climate contributes to the standards of human efficiency and sanity, and to the conditions of exhaustion responsible for mental disorders.

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Intracranial Pressure; Its Determination and Significance in Neurosurgical Conditions*

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By increased intracranial pressure is meant the increase of pressure within the cranial cavity, and it is due to interference with the cerebrospinal fluid circulation, whether intracerebral or extracerebral in origin.

Normally a direct ratio exists between the arterial blood pressure and the intracranial pressure. When a pathological situation arises, the former normal proportion becomes altered. Logically one would deduce that as the blood pressure increases, so should a parallel rise in the intracranial pressure occur; and as the blood pressure falls, so should the intradural pressure decline; but this supposition is fallacious when considering abnormal cerebral conditions. The parallel rise in arterial blood pressure corresponding to the intracranial increase does occur, it is true, but only as a late and delayed sign when permanent cerebral tissue damage has already been produced. Brain tissue, as all are aware, never regenerates once destroyed. The ideal desire in all neurosurgical conditions is for an early diagnosis and as blood pressure is a late indicator, some other means must be sought.

The various branches of the vascular tree differ in their blood pressures, being highest in the arterial system, next in the capillary network, and lowest in the venous circulation. When an intracranial condition arises and the cerebrospinal fluid system is altered in some respect, whether in the form of a hypersecretion of the cerebrospinal fluid due to an irritant, or an interference with the absorptive area or an encroachment upon its circulatory channels, then a certain amount of stasis must naturally occur within the cerebrospinal fluid system. With an increase in the total amount of cerebrospinal fluid within the calvarium, a rise in the intracranial pressure results, and with such a situation pressure occurs upon all the intracranial contents; the less solid or compact the structure, the greater the compression upon that particular structure. As the vascular system consists of a set of hollow tubes with a fluid substance flowing through them, and also with a varying degree of pressure, depending upon what branch of the tree it is, so will the compression effect vary. With this in mind, it is natural enough to conclude that the veins, possessing the lowest pressure, will be first the structure to be affected. The result of this compression is to produce a venous congestion of varying degree, depending upon the intracranial pressure. With an increase in this venous congestion, a secondary decrease in the cerebrospinal fluid absorption is produced. Since eighty per cent. of the cerebrospinal fluid is excreted through the supracortical veins and the other twenty per cent. by the Pacchionian bodies along the superior longitudinal sinus, it is easy to see how a vicious circle is thus produced. With the continued secretion of the cerebrospinal fluid by the choroid plexus of the lateral and third ventricles and a small amount in the fourth ventricle and a decreased absorption or excretion of this fluid, together with a continued increase in the venous congestion due to the increasing intradural pressure, it is not difficult to conceive to what degree the intracranial pressure may rise when the capillaries and finally the arterial system are also involved in this external compression.

The determination of increased intracranial pressure resolves itself into the clinical observations, namely, symptoms and signs, and the instrumental or mechanical findings. Again, the symptoms and signs may be subdivided into the two main groups of general and focal. Among the frequent general symptoms and signs are headache, projectile vomiting, dizziness, vertigo, visual impairment of varying degree but always growing progressively worse, various degrees of somnolence and coma or insomnia, slowed pulse and respiration, gradually terminating in the Cheyne-Stokes type of breathing, various forms of mental aberrations and changes in disposition. The focal symptoms and signs depend upon the site of the brain involved and a knowledge of the anatomy and physiology of the brain is essential.

The mechanical methods employed in diagnosing increased intracranial pressure are, in the order of importance and significance, 1, the spinal mercurial manometer, 2, the ophthalmoscope, 3, the blood pressure apparatus and 4, the x ray.

The spinal mercurial manometer is an apparatus of more or less recent addition and still more recent adoption by the profession. There are several mercurial manometers on the market today, in addition to the water manometer. The general principle of all the mercurial apparatuses are the same and the

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description of any one will answer for all and will suffice for our purpose. The best known mercurial manometers are those of Jackson, Fleischer and Landon. The only advantage that the latter two possess over the former is merely a matter of size; the latter two can easily be carried in a coat pocket, whereas the Jackson outfit is a little large for that convenience. On the other hand, the Landon manometer has the disadvantage in that the stop cocks very often become clogged owing to the spinal fluid coming into contact with them. In the Jackson apparatus, the simplest of all, spinal fluid at times enters the glass manometer tubing, but that is easily cleansed with saline, alcohol and ether rinsing. The same slight accident at times occurs in the Fleischer apparatus but it is of less importance here.

The principle of all the manometers is that of a U shaped glass tube containing mercury, a scale graduated in mm., a rubber tube which is attached to one end of the U tube and the other fitted into the lumbar puncture needle by means of a connector or adaptor. The entire procedure consists in performing a lumbar, cistern or ventricular puncture, inserting the adaptor into the exploring needle or cannula and noting the height to which the column of mercury rises in the tube. The scale, parallel to the tube, signifies the pressure in mm. Hg. In a child the normal intracranial pressure on such a mercurial apparatus is 5 to 7 mm. Hg., and in an adult it is 7 to 9 mm. Hg. The mercurial manometer is the most delicate and most accurate of all the mechanical devices. In addition, it registers the faintest rise in intracranial pressure and is the earliest indicator of intracranial disturbance. The manometer does not fail, as does at times the ophthalmoscopic picture of the optic disc. It can safely be claimed for the spinal mercurial manometer that it is the earliest and most reliable detector of increased intracranial pressure.

The next important and reliable instrument is the ophthalmoscope. The ophthalmoscopic findings are a matter of personal interpretation in the early stages of optic disc changes and sufficient opportunity is present for differences in opinion, whether there is slight engorgement of the veins, whether the nasal margins of the discs are blurred, whether the picture observed is at all significant of an early beginning pathological condition. There is at least here grounds for dispute and variations of opinion. The mercury registers automatically and discussion as to the interpretation of the scale reading is eliminated. The manometric findings are not a matter of personal equation but are the same for all who execute the technic properly.

In many intracranial conditions where one would naturally expect fundus changes, it is surprising how often we find our expectations not materialized—the discs happen to be normal when we anticipated choked discs or at least some papilledema. Thus, though the ophthalmoscope is a most valuable instrument and its findings are of great significance, yet both are only second, at best, to the infallible, perfect mercurial manometer.

The increased blood pressure determination is a very late sign of increased intracranial pressure. Only when the compression has already involved the medulla does the blood pressure rise to assert its importance. But who wishes to delay and to defer a diagnosis until the late signs become evident? This is an age of attempted early diagnosis and we are all striving for that goal. With this, we can dismiss the blood pressure apparatus from vital consideration in most neurosurgical conditions.

The x ray is merely mentioned for completeness. As an aid in the diagnosis of increased intracranial pressure, it is not only a late sign but a prolonged and advanced sign. To obtain sufficient thinning, rarefaction or absorption of the calvarium as a result of increased intracranial pressure, the case must be one of extremely long standing. The value of the x ray in the diagnosis of this condition is practically nil, and in the early cases it is absolutely nil.

The common neurosurgical conditions which are most likely to have associated with them increased intracranial pressure are, 1, intracranial neoplasms; 2, intracranial abscess; 3, large sized hemorrhages, traumatic or otherwise, supracortical or extradural in position; 4, internal hydrocephalus; 5, external hydrocephalus; 6, acute brain injuries with the development of traumatic cerebral edema of some degree and 7, localized serous meningitis.

The time of appearance of increased intracranial pressure in brain tumors is apt to be manifested earlier in those neoplasms where the pathology is that of new tissue formation and where the tumor is a true addition to the total brain substance itself, as in sarcoma or endothelioma (meningioma as Cushing terms them at present). In considering meningioma one must remember that they are not true brain tumors in that their origin is from the meninges and not from the cerebral tissues. On the other hand, the intracranial pressure increase may be delayed and insidious in onset in brain tumors such as gliomata, where the pathology is a gradual infiltration of the cerebral tissues itself, in fact, such tumors may be considered cases of hyperplasia of the connective tissue structure; yet increased intracranial pressure is present even in cases of gliomata by the time the neurosurgeon is called into consultation.

The term intracranial abscess is preferred to the more common usage of brain abscess, for the reason that the latter term must imply brain tissue destruction and replacement of the same by purulent material. Extradural or leptomeningeal abscess is not in the literal sense of the word a brain abscess, though it is an intracranial abscess, and this discrimination in terminology should be strictly adhered to. In the early stages of true cerebral and cerebellar abscess, increased intracranial pressure may be either entirely lacking or show only a slight rise. The explanation for this lies in the classification mentioned above, namely, that it is a replacement of normal tissue by a pathological substance and not an addition to the total cranial content. In leptomeningeal or extradural abscess, the situation is different in that a foreign mass has been added to the normal cranial contents. Increased intracranial pressure will be evidenced early in this condition.

Intracranial hemorrhages into the brain tissues do not as a rule produce an increased intradural pressure. When the hemorrhage is of sufficiently large size and is either supracortical or extradura, the hemorrhagic clot acts as a new growth in that the

normal skull contents are increased and, in addition, interferes with the normal excretory channels of the cerebrospinal fluid. Besides, the blood clot occupies and, thereby, obliterates a certain portion of the absorptive area of the cerebrospinal fluid. The localized stasis of cerebrospinal fluid thus produced is the beginning of an external hydrocephalus and as the latter condition progresses, increased intracranial pressure becomes more evident.

Internal hydrocephalus is produced by an obstruction to the ventricular system in some part of its course either by a neoplasm or by firm adhesions, the result of prenatal or postnatal meningitis. The socalled cases of congenital internal hydrocephalus have been demonstrated on careful microscopy to have been the end process of an intrauterine meningeal condition. There are several types and degrees of internal hydrocephalus depending upon the site of the pathology and the duration of the condition. If the foramen of Monro on either side should be occluded, then a unilateral internal hydrocephalus would result. This particular type of case is extremely rare, though occasionally in a large series one is likely to meet with it. The more common forms are those where the blockage occurs either at the aqueduct of Sylvius or at the foramina of Luschka and Magendie. In the former event both lateral and third ventricles become dilated and in the latter case all the brain cavities including the fourth ventricle become enlarged. To produce a hydrocephalus of the fourth ventricle all three cerebellar foramina must be occluded.

Some authors subdivide the old classification of external hydrocephalus into the nonabsorptive and hypersecretive forms. In the former instance a normal amount of cerebrospinal fluid is secreted by the choroid plexus but the absorptive power of the subarachnoid spaces is lowered and, therefore, a stasis occurs on the external surfaces of the cortex and in the various cisterns. In the latter condition the manufacture of cerebrospinal fluid by the choroid plexus is so markedly increased that the normal excretory channels are unable to cope with the cerebrospinal fluid production and, thereby, a certain amount is always left unabsorbed. With the secretion constantly in excess over the excretion a condition of external hydrocephalus soon presents itself. There is a form of hydrocephalus which is a combination of both forms, namely, the nonabsorptive and hypersecretive. This type, as would be anticipated, is the more serious of the forms of external hydrocephalus.

Another form of hydrocephalus is that in which there is a coexistence of internal and external forms. In these cases the most plausible explanation is that originally the condition was an internal hydrocephalus with the expected dilatation of the ventricles and later the obstruction being destroyed or torn, with the result that the sudden release of a superabundance of cerebrospinal fluid into the subarachnoid spaces over and above its excretory power, converted some of the internal into an external hydrocephalus.

In the internal type of hydrocephalus the blockage of cerebrospinal fluid produces an increased intracranial pressure provided the cranial suture lines and fontanelles are closed; if, however, they are still open, the intraventricular pressure, instead of being registered as increased, remains normal at the expense of the separation of the sutures and enlargement of the fontanelles. With the firm union of the suture lines and closure of the fontanelles the intraventricular pressure increases at the expense of the cerebral tissues. In external hydrocephalus, where a stasis, occurring on the surface of the cortex, interferes with the normal excretion of the cerebrospinal fluid, the increased intracranial pressure varies directly with the degree of obstruction of the absorptive powers of the cerebrospinal fluid.

In cases of acute brain injury increased intracranial pressure develops only when traumatic edema is associated with the initial trauma. The etiology of this cerebral edema may be explained upon several hypotheses. It may be the result of a transudation of blood serum as is found in contusions elsewhere in the body. Again, it may be due to a traumatic irritation of the choroid plexus, caused by a sudden mechanical stimulus with the production of a hypersecretion of cerebrospinal fluid and a resultant cerebral edema; or as a result of the cerebral congestion there is a retardation of the normal excretion of the cerebrospinal fluid with the ultimate production of an external hydrocephalus or wet brain; or it may be due to a combination of the latter two suppositions.

By a localized serous meningitis is meant a localized collection of cerebrospinal fluid within the leptomeninges, well walled off by adhesions and not infected, producing signs of increased intracranial pressure in the same capacity that a dural meningioma or an extracerebral abscess does. The term, localized serous meningitis, employed today is a misnomer and should be replaced by a more descriptive term as noninfective localized meningitis. These conditions are usually found following ear complications and especially after mastoid operations.

To be capable of detecting early the presence of increased intracranial pressure or to be able to have definite knowledge that the intradural pressure is increasing, is from the viewpoint of differential diagnosis alone of sufficient importance to warrant the universal adoption of this delicate test. The routine employment of intracranial pressure determinations by means of the spinal mercurial manometer will serve to differentiate many neurological from neurosurgical conditions. In addition, many neurosurgical diseases will be discovered at an earlier period in their development when surgical treatment will offer the possibilities of a better prognosis than most neurosurgical conditions do at present. The persistence of a chronically increased intracranial pressure produces in the end not only mental impairment and emotional instability, but also is very likely to produce total and permanent blindness, provided the pressure is sufficiently high.

We owe it to our patients to detect increased intracranial pressure early, to institute proper therapy immediately and to explore surgically when the lesions are small before permanent cerebral damage has occurred. The accurate measurement of increased intracranial pressure should be the first commandment of the neurosurgeon's bible.

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The Child Family Relation: a Psychosexual Study

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The child parent relationship as a psychological problem is one of the most important we have to deal with, and yet is probably one of the least generally understood. Certainly this is true in regard to the psychosexual phase of this problem. Every physician should have some knowledge of the genesis of the psychosexual life. Hitherto the literature paid much attention to the physical side and gave but little consideration to the mental aspects.

However, only in the past twenty years has the discussion of sex been dignified by its presentation before learned societies. Jung has said that the objections to the discussion of sex, in most people, are not intellectual, but are founded on a feeling of moral resentment. So one is advised to go guardedly into the sex history of certain types of patients. The attitude of the examiner is more important than the sort of questions he asks.

The youth's attitude toward the question of sex is very important—more important probably than any childish expression of the impulse. We are well aware that habitual abnormal phantasying in a child may result in later abnormal traits and trends. To get at the real factors in the individual patient, one must approach the subject sympathetically, and not with dislike nor disdain.

While it is granted that there are other impulses in life besides the sexual, nevertheless sex issues lie at the heart of our emotional life, particularly the hidden sex influences. The emotional content in sex is admitted by all students of human character. And emotional experiences produce the greatest reactions in man.

Because none of us has any conscious memory of our first five years of life, is the reason why we regard these years as unimportant in shaping our character. As a matter of fact psychopathologists agree that they are the most important years of our lives, as far as character moulding goes. In fact, early life experiences are the basis of character. They remain dynamic throughout life—even though there is amnesia for the experiences themselves.

One can in truth say that character is determined absolutely by the guardians of the first five years of life. An individual's fundamental (not compensatory) traits are formed by the time he or she reaches the age of five years. Any observer can prove this by observations on his own children.

Heredity, alone, will not explain character traits. The environmental influences probably have great weight. In this way we can explain how it is that parents' traits are passed on to the children. Emotional difficulties in a parent or grandparent will show in the children or grandchildren. This theory is applicable to sex reactions. The child is conditioned (unconsciously) to react to sex in accordance with the parent's attitude; this colors its own later (adult) attitude. This is important to remember.

One can say that if a child has normal traits at the age of five, it is not likely to show hysteria in later life. One can also say that a spoiled child is apt to be a spoiled adult.

Character has to do with our traits and trends. It manifests itself by the way we use the material that is in us. All individuals have two tendencies; one, the infantile regressive way, to draw within himself (common in the neuroses); the other, the adult way, to project himself into the environment. Character has more of an emotional than an intellectual origin. It is formed in general by the interplay of the individual and his social environment.

One's character might be described as a condensation of one's history from birth, with prenatal influences added. As Henri Bergson, the distinguished French philosopher, says, we feel and act because of our past, though we are aware of only a small part of it in the form of ideas.

The most important element in the diagnosis of character is to determine whether a particular trait in a person is fundamental (real) or compensatory (assumed).

Compensatory traits cover feelings of inferiority or of insufficiency. Compensations are to hide tendencies of an opposite nature; this being a selfdefense mechanism. Most normal people feel the need of developing selfrespect, and of acquiring social esteem.

The sex forces, if properly handled, can become the most constructive in an individual's personality. However, they can be the most insidiously destructive, if not managed properly. A person having a feeling of sex inferiority, whether organic (like the masculine woman), or functional (as eroticism) is continually striving for selfprotection. An unsuccessful striving may be the determining factor in causing a neurosis. In an ethical youth, morbid fear of erotic feelings or dreams is a not infrequent cause of intractable insomnia.

A person may inhibit the ideas of sex, but not the energy. People with much unutilized or unsublimated sex energy (tension) react to most sex situations more than one normally should. The man or woman with no sex difficulty whatever (particularly affective), will usually remain free from a neurosis. It is quite difficult for most people (excepting ascetics and philosophers) to sublimate all sex energy completely and entirely, and at the same time remain free from physiological tensions. Often those suffering from sex conflicts show a general loss of interest and are much preoccupied. If later they take a spontaneous interest in the environment and current events, this means that they have overcome their difficulties. This is of good prognostic omen.

Many people are quite willing to admit energy in connection with the selfpreservative instinct, yet loath to do so in regard to the racepreservative instinct. And yet when we compare our easy life with that of former centuries, selfpreservation is a much simpler matter now. And so much of the selfpreservative energy is utilized in pleasing the senses (including

sexuality. Sexuality is not equivalent to sensuality; but includes all that is embraced by the word "love"). To make matters more difficult, the allurements of civilization tend to increase and stimulate sexual energy. At the same time, culture markedly represses its expression. (True, eroticism is much disguised by culture, and the attempt is made to socialize much of this energy.) So in many instances, with overproduction and overrepression, there is a failure of socialization, and a neurosis results. With the neurosis, the patient falls back to the infantile (sensuous) level.

It might be said that the average person reacts to sex either prudishly or vulgarly. It is this instinct that is most tabooed, and the one that is least understood. So because of the greater repression of everything pertaining to this phase of life, it is more distorted than any other. A proper appreciation of the sex factor in the causation of the neuroses would make us understand them better. Then, for example, one would have a better understanding of the *raison d'etre* of many climacteric neuroses—instead of studying them only as vague doubtful endocrinological disorders. To stress only the physical etiological factors in the neuroses, and to neglect psychogenesis is a grave mistake. This is selfevident if you admit the neuroses are disorders at the psychological level. This is particularly easy to study in children —where phantasying and imaginations show their close connection to the neurosis.

There is a saying that many people are ethically and socially normal, but sexuality remains their weak point. But a person abnormal socially and ethically is regularly abnormal sexually. Sexually abnormal people may remain comfortable as long as they avoid comparison with sexually normal people.

Now let us review briefly the psychosexual life of the child. From birth, it is selfcentred. As it grows older, it is animistic, e. g., it invests its toys with life, etc. Being egoistic the young child never sees its own shortcomings. It feels contented and safe within the family circle, but unsafe or fearful outside of it. This early family situation must be studied carefully. For in the neuroses, before the patient can fully understand himself, he must first learn his family romance.

Naturally the infant has yet acquired no idea of morals—nor has it any idea of personal nor of property rights. (When we see this egocentricity in a hysteric, it shows a failure of psychogenesis.)

The young child has much to forget, because of later social needs. By a continued process of constantly repressing its primitive tendencies, it gradually becomes a miniature socialized being, by the time it reaches the age of five, or thereabouts.

During the development of the young child, its wishes and the wishes of its social environment conflict. But of course, social success is necessary for culture. (Where the process is taken too seriously, a neurosis may ensue.) Most of this early period is repressed into the unconscious, hence our later amnesia for these years. After the age of five, the refined child will only satisfy any asocial trends by phantasying them, or performing the acts symbolically, instead of executing the acts directly. To do otherwise would produce nervous symptoms, because of the conflict.

It is well to remember that an essential feature in a neurosis is the shame felt in regard to the asocial activity of an organ or function. The neurosis results from the conflict between the patient's ideal self and his hidden, asocial tendencies. Afterwards the patient feels fearful, angry, ashamed, embarrassed, but he refuses to admit this, and merely complains of feeling nervous or worried. Selfaccusatory ideas in a youth often have masturbation as a basis; with such as he we see preoccupation, loss of interest, or depression. He does not accuse himself directly of this act, but usually of something else. This type of reaction is more apt to be seen where the youth has received severe censure from a parent. Of course, bad traits must be corrected; for if they get beyond control they will cause a bad personality. But constructive, sympathetic help is needed; not censure. In these cases the physical results are exaggerated; the real sequelæ are psychic. Boys and girls with otherwise good traits are easily cured if properly handled. Severe punishment cures no habit; it merely causes resentment.

The ultimate end of sex is pleasure, not merely physical, but affective. In refined human beings, the affective is the more important of the two. In the child, of course, pleasure is psychologically a less complex feeling. The infant is normally interested in his own body, because of its curiosity instinct (i. e., is autoerotic. This term is not limited to the sex phase, but applies to interests in the whole body). There are some adults who never get past this stage.

Without going into the psychogenesis of the sexual impulse in detail, it is well to remember that after the autoerotic stage comes the narcissistic stage. Next we observe that the child's chief interests and likes centre about the family. From late childhood to puberty, the boy—and somewhat similarly the girl—develops extrafamilial interests. He forms close friendships and attachments for other boys. At about the time of puberty, he first becomes interested in the opposite sex. These attachments, we are considering chiefly in regard to their affective (emotional) aspect.

Now, if the child is faultily brought up, development may be retarded at any of these stages and there become more or less permanently fixed. In such cases, there is an arrest or even a failure of interest, to go on in the normal way. The results are character defects.

Of course all children have a sexual instinct. But no observer believes that this instinct suddenly flowers at puberty; rather that it passes through a gradual and progressive development. Sex in the child (in its affects, aims, expressions, etc.) is an entirely different proposition as compared to sex in the adult. The young child knows nothing of sex in the adult sense.

The young child knows of sex only in terms of the excretory functions, and it knows of these because of its natural curiosity instinct. While this type of sexual curiosity in the child must be refined, it is not necessary to ruin the child in doing so. You cannot eradicate phylogenetic influences completely, although they can be sublimated.

All parents without doubt have noticed these excretory interests, so characteristic of young children. And it is necessary for the parents to repress them,

else they are apt to become the basis for certain abnormal traits in later life; e. g., abnormal reactions of disgust, frigidity, etc. All parents manage this problem differently; some with tact, others with intense loathing, and others with too much ceremony. Young children derive an affective satisfaction in reacting to physiological needs—social culture not yet having gained the upper hand in repressing such gratifications.

We all know how very young children like to show their power. (Even some adults never give up some of their infantile ways of showing power.) It is safe to assert that desire for safety and for power are the motives back of much that the young child does. And in later life, it is also fair to assume that the guiding idea in the desire of the sick adult to secure the confidence of the physician or the clergyman, is his desire to secure safety and power in their different phases. Where a neurotic fails to secure this, it may mean psychic death (failure), expressed in terms of morbid fear.

In older children (ten to seventeen years), it is well to keep in mind that their phantasies—often not clearly crystallized—have a tendency to converge on the pelvis. For the phantasies of the period of puberty, as a rule, belong to the adult, and not to the infantile type. And misunderstood feelings in the child at this time may cause dread and apprehension. Sensitiveness is often marked. This trait, however, is only pathological when its consequences are incapacitating or destructive to the individual.

Sex undergoes marked repression in all children from infancy, but repression is greater in girls than it is in boys. So it is said, therefore, that in this sphere girls must be more on their guard than boys. The proof of this is remarkably well shown in the mental upsets of later life. In the psychoses, we quite regularly notice that men practically never hallucinate normal sex phenomena; whereas, in psychotic women, the converse of this is true. The reason for this antithesis lies in the fact that sex conflicts more with the ideals and with the main personality trends of women than it does with those of men—so that with the former, conscious gratification is out of the question.

It is quite well recognized that exaggerated sex repressions prevent many girls from ever falling in love and marrying—this in spite of the fact that there may be a conscious liking for some man. But the driving force to enter matrimony is absent. If they do marry, it is not because the race preservative instinct is so strong; their reasons are more apt to be practical. And marriage to them is often a burden or a bore. For it is quite evident that a person cannot get pleasure from an external action or situation, unless the act or situation causes satisfaction within. Girls who are autoerotic, or at least who never progress beyond the adolescent stage, usually have only a superficial interest in children. They often have a cynical regard for love.

Where a growing person's energy, interest, and attachment linger (more or less completely) at a certain stage of development—as on self, family, etc.—we refer to this as a fixation. Now fixation interferes with the development of normal adult characteristics. These fixations are especially common in neurotic children.

Without doubt, the most important lesson to learn in child psychology is to bring up the child so that at the end of adolescence (twenty-one to twenty-two years), the child will affectively (emotionally) emancipate itself from the family. For all students of this subject are agreed that a failure for the child to emancipate itself from the parent is an infantile reaction on the part of the child.

The affective attachment to the mother is in many cases so abnormally intense, that it makes the person dependent on and bound to the family circle—to the exclusion of those outside interests that make for progress. One can understand how a marked fixation on the family spoils for larger sociability, and narrows the interest in the world of reality. The normal person gets away from this infantile attitude. (It is needless to say that we are referring to abnormally close family attachments; the sort that keeps one from having any real interest in the outside world; and not to normal family love—which is an incentive for one to be interested in the world at large.)

White asserts that the strength of the undue attachment to the family circle, particularly if egoistic, is a measure of the failure for character to develop. Complete dependence is equivalent to social failure and uselessness; to say the least, it is deforming to the personality. There are instances where an excess of misapplied love for a child has done more harm than a slight lack of consideration. We all know that abnormally petted children in later life long only for the lesser world of the family circle; the outside world means nothing to them. Thus their energy becomes locked up, and unavailable for useful work.

Failure to free oneself affectively is often seen, for example, at the time of marriage. The separation from the family becomes unbearable and a neurosis results. The patient and the family, of course, always blame other factors for the nervous upset. If such marriages do not turn out badly, at best they are usually only negatively successful.

Unfortunately, parents only see the good side of this undue family fixation, which persists after adolescence. They fail to observe (or will not see) its destructive influence, as an asocial relationship on the personality.

A parent's attitude exerts a much more powerful influence in producing this fixation than any words he or she may use. For a parent's unconscious emotional hold, much more than any conscious efforts of that parent, is the deciding factor in the child's reactions. If the influence interferes with the child's biological destiny, it may destroy the personality of the child. A parent may do harm where he or she means to do good; e. g., a mother who babies her son does not realize the harm she is doing—that in continuing this course after adolescence, she thus causes him to lose his needed manly aggressiveness.

It is not rare for a boy with a fixation on a widowed mother to become a failure if she remarries. The reason for this is his inability to find another suitable object for his affections. Or the son of a lonesome or unhappily married woman, who has a very strong affective attachment to her, becomes so conditioned by this emotional attitude as he grows older, that if he ever should marry, he chooses a woman who is more of a mother to him than a wife.

The age is not important; the girl's traits are the determining factors.

A child's love interests must be thought of in terms of feeling. The person, who as an adolescent had a pronounced fixation on one or both of its parents, is very likely to be an unsatisfactory partner on marrying. (Particularly so in the case of only children who have been overcoddled and badly trained throughout childhood.) If in addition, the parents are blind to the real situation, or to their social duty, and foster this fixation even after marriage, trouble almost invariably ensues to the married couple. (Feelings of lonesomeness, dysharmonies, wishes for freedom—or a neurosis—are common sequelæ.) At best, such individuals make mediocre partners.

A growing girl may devote herself to her mother assiduously, and continually repress her cravings for motherhood. Later in life, in the thirties or forties, when there is a partial failure of this repression, she is likely to develop a neurosis.

A few more words about the psychology of the family situation might be of value. Nervous types very readily absorb the home difficulties. Bad conditions, to say nothing of the general atmosphere, in unhappy homes favor maladjustments in later life. This is a more direct explanation than the more circuitous hereditary route. Where a neurosis develops, it is in great part due to the characteristic emotional influences of the parent or parents on the child. There is nothing truer than the fact that the child is a great and consistent imitator of its parents or guardians.

It is axiomatic that in every neurosis and psychosis, another member of the family is involved, usually as a repressive influence. So it is very important that the physician should carefully study the family situation in all of these cases.

The acts of the family have great social value. The child's idea of his family is frequently at variance with the idea that the neighbors have of his family. The good manners of some families (and sometimes their ethics and their morals) are not uncommonly assumed, being a compensation, to produce a good general or public impression.

All parents do not have the same regard for all of their children; nor do they treat them all alike. Especially is this so, if one (or more) has resulted from an unwished for or unwelcome impregnation: not a rare occurrence.

Parents who have as prominent traits, selfishness, extreme touchiness, prudery, or hatred, can hardly expect to rear children with normal traits and trends.

One can easily picture the difficulty where a neurotic patient, with sex as an evident factor, has to depend for assistance on a parent whose chief trait is excessive prudery. And one must distinguish between goodness as a real trait, and prudishness as a compensatory trait. In the instance just mentioned, sympathy may be given out of the mouth, but not from the heart. Verbal sympathy and affective sympathy are not the same.

Our fate really depends on our early family affections. A child's first loves and first hates relate to those in the family circle. (Clearly seen in psychotic upsets.) Family feuds are often very intensive and constitute a great hindrance to the proper management of a nervous patient in such a family.

We hear a great deal of the child parent love, but very little of the child parent antipathy, resentment—even hatred. The latter is repressed but it leaves its effect, and is often the chief etiological factor in a later neurosis.

The cravings of the young child demand that its love be returned. Where it is not returned, the child feels resentment. But even then, because of the ambivalency of feelings, the child still loves the parent against whom he is antagonistic.

A father, though he be otherwise good and thoughtful, may spoil individuality in his growing son by unnecessary or harsh domination. It might be said here that many men who devote most of their time to creative thinking, are not practical fathers.

It is well to remember that there are two extreme ways of training a child. One is with excessive love and coddling; which causes dependence and weakness of character. The other is with a lack or absence of love, and too great severity, which causes chronic dissatisfaction and discontent, a turning inward of the child's feelings, antagonism, etc. One must avoid either extreme—of giving absolute freedom, or of completely dominating the child.

Children who are unduly subdued, lack initiative and natural curiosity, which are normal characteristics of the child. Such a child in later life is apt to be interested in him—or herself. If the psychic development never gets beyond the adolescent attitude, such a one is disinclined to marry; or marriage may be entered into rather cynically. Such types have only a superficial interest in rearing children.

One might put this in another way and say that an oversubdued male is apt to remain autoerotic, or take an interest only in the endeavors and pursuits of man. If he marries, his heterosexual attitude being weak, he soon regresses to the easier adolescent level. (A psychic and not a physical regression is the rule.) He may have a plus social, but a minus love interest in women.

Many children are incidentally brought up, instead of being guided along, as far as any intelligent attempt to develop character is concerned.

The parent should realize that to harshly taboo every normal interest in sex in the growing child favors secret vulgarity or prudishness; and it also drives the child from the parents or guardians to improper sources to satisfy its curiosity. The wise mother with her magnificent emotional hold on the child can divert the interest in sex to other estimable paths. To free a child from sex difficulties, it is not enough merely to try to talk the interest in sex away, nor, worse still, to severely censure the child. Sympathy and the substitution of approved healthy activities to use up the energy is what is desirable.

It is really a bad mistake on the part of the parents to try to inculcate ideas that everything relating to sex is shameful or degrading. This will only condition the child to react to sex, even after marriage, with dislike, disgust, or shame, and in this way jeopardize the happiness of married life.

The parent's love for the child should be altruistic, not selfish. Real culture demands that the child should be reared for its own welfare, and not for the pleasure nor profit of the family.

The repression necessary to refine the young child must not be overdone. And it must be accompanied

by social substitutes for the expression of his energy, if he is later to become a normal social being. For excessive repression, with a failure to socialize sex energy, is sure to cause bad character trends (autoeroticism, narcissism, etc.) in the child. A similar failure of socialization in the sphere of hunger, produces the various types of the glutton. In training the youth, your aim must be sublimation. (A term borrowed from chemistry, meaning to refine.) No advice not in accord with normal ethical standards, nor which is against the dictates of medical dignity, is permissible. One must remember the social obligations of the profession.

It is not hard to see how an ethical individual with an erotic disposition, will find it difficult on recovering from a neurosis to remain comfortable, unless the family furnishes acceptable outlets for the sublimation of his or her energy. The aim of sublimation is to direct sexual and asocial cravings into socially approved channels. It is not meant to allow the energy to be wasted, nor to annihilate the sex affections. Thus the cure of masturbation is along these lines; at the same time inculcating a fine moral tone in the young individual. This is quite different from harsh criticisms, making false and unscientific prophesies about resulting insanity, chronic invalidism, etc.

The degree of sublimation depends on the strength of the good traits inculculated in the first few years of life. The means used are numerous; study, devout prayer, invigorating play, and pleasant work. All of these help to elevate the emotions, and to direct them to a more useful goal. Fostering an interest in music, art, literature, friends, hobbies, etc., is valuable.

So in general, one can say that the two aims in managing these cases of sex difficulties are, to diminish the strength of the cravings, and to increase the number and quality of good social outlets.

In concluding, I would like to emphasize the value of the study of the psychosexual life of the child. Child study in its social aspects has long occupied the minds of our best students. But this was not always so. It may surprise many to learn that in the United States there was a society for the prevention of cruelty to animals (1823) before the first society for the prevention of cruelty to children was founded (1874).

Psychopathologists, today, are giving close attention to the study of the child's psyche. And with a fuller knowledge of psychogenesis in the child, one can better understand the sex interests and problems of the child and youth. In many of these difficulties, the psychic factors are extremely more important than the physical ones. Certainly it will be admitted that the absence of happiness in a nervous individual is clinically of more importance than the presence of a dermatographia or an indicanuria. So for such reasons, we must fathom the real underlying causes of nervous disturbances. Superficial explanations are usually only deceptions. The task is a difficult one; but the results obtained will repay your intensive study in every instance.

92 Gates Avenue.

The Work of the New York Psychiatric Society*

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I wish to call attention to some of the matters that have received our consideration as an evidence of what we have stood for in the past two years.

While we may be able to record upon the printed page some index of our scientific programs, it is not possible to transcribe the results of the work done by you in committee which has been of such signal service to the success of our meetings and which have given this society a prestige of which we are little aware. The splendid work of Russell as chairman of our legislative committee, of Dana, as chairman of more than one committee, not to mention others, has been of much material service to your president, for which he would at this time extend his sincerest thanks.

In calling attention to our scientific programs, I shall not at this time make any effort at completeness; I shall only take up a few of the contributions to our field which I believe are worthy of accent. In so emphasizing these few features I would not mean that others were not of equal value. Inasmuch as I cannot review all of this work, my selection has been difficult, and to avoid any invidious comparisons, let us say it has been purely fortuitous.

*Address of retiring president, February, 1924.

At our first meeting in February, 1922, you did me the honor to listen to my Introductory Address on "Paleopsychology; a Suggestion Covering the Evolution of Symbolic Functioning"—in which I attempted briefly to indicate a conception in the evolution of the psychobiological sciences which might be of service in disentangling the complicated symptomatic behavioristic perplexities which surround us as psychiatrists on all sides.

That the human psyche has a history it was not necessary to point out to this society, but I did deem it pertinent to accent some features of primitive thinking which were constantly outcropping in human behavior, which by reason of their strange and bizarre character had always been of special interest to our science. I felt it profitable to look at these in some manner analogous to the outcroppings of certain paleozoological forms in the study of geology and accented the possibility of erecting a new subdivision of our science which might envisage all of these archaic and strange remnants of the more primitive stages of the laying down of the human ego. I might at this time not unprofitably call your attention to the more recent work of Lévy Bruhl on *Primitive Mentality*, and of Storch, on *Archaic*

Activities and Thinking in Schizophrenia as bearing directly upon this topic.

This meeting also dealt with some important features of the manic depressive psychoses. Kirby outlined the rich clinical picture, Clark and Amsdem spoke of the personality trends, Gregory touched upon a number of interesting clinical situations, Cotton showed how the hypermotility was registerable on x ray plate and your president accented what even mere recent investigation has shown, that unconscious homoerotic factors play a large part in determining the special picture in a great number of this general group of cases. In the terms of his opening address, here was a situation which phyletically considered was in part conditioned by the persistence in the unconscious cravings of as yet unsocialized adaptations of a more primitive type of object attraction. Here was a situation which in terms of archaic symbolizations the ancient Hebrew theologists had called "blasphemy to God" and had described, as historical, the destruction of Sodom and Gomorrah which was but a mythical, or primitive mentality form of presentation of these still present failures in social evolution.

In our March meeting we were fortunate in obtaining some insight into the significance of the dynamic forces operative under the disguise of what we call dementia precox: L. Nolan Lewis, of St. Elizabeth's, in Washington, brought before us the rich material of that leading institute in the United States. He showed us how the body as a whole was involved in the dementia precox reaction. In a highly instructive manner documented upon pathological material that said but one thing, he showed us the numerous aplasias, or defective developmental changes that were present throughout the entire body. Small hearts, small aortas, small arteries, apalsic endocrines. Here were widespread defects that showed up the dementia precox reaction types in a much more comprehensive manner than had been our habit to see them. We were unfortunate that sickness prevented him from developing a related group of observations concerning the paranoid persecutory reaction types in whom the high tension of compensatory strivings had built up an entirely different somatic picture.

Of a related behavioristic personality type, L. Pierce Clark developed for us some further considerations concerning the nature of the consciousness of the epileptic. Your president in his opening address laid before you the general proposition that mentality types could be advantageously studied in terms of gradation from upper to lower forms. Your knowledge of the mental frames of the idiot and imbecile which in a general way can be studied advantageously along lines of animal behavior, makes it all the more readily conceivable that the less severe grades of personality disintegrations are capable of somewhat similar differentiation. Thus Clark presented the conscious personality syndrome in the essential epileptic and discussed its nature, particularly in its faulty adaptation to social requirements and its gravely altered constitutional background.

It was my good fortune to be able to spend five months in Europe in the summer of 1921, during which time I visited the chief neuropsychiatric centres of Northern Europe, where I met many friends I had known before the war and made a number of acquaintances with the younger band of workers who had come to the fore during the seven year interval since my last visit. I took you all too hastily through this pilgrimage and sought to show by a large collection of lantern slides the chief lines of development which were going on.

The encephalitis epidemic had raged widely and in all the countries visited the returns of rare and anomalous motor and psychical symptom pictures were being analyzed. Both the Paris Neurological Reunion and the German Society of Neurologists had made these the chief topics of their discussions. I was able to show you photographs of the workers and some of the anatomical pathological findings of this greatly expanding knowledge of the amyostatic syndrome and their striopallidal correlations. The work of the Dutch school headed by Winkler, and ably supported by such men as Kappers, Brouwer, Magnus, Klein, Jelgersma, the Boltons and the Baumanns, concerning problems of comparative neurology, of decerebrate rigidity, of the vegetative syndromes and newer work on the psychoses was presented.

At our meeting in November, 1922, we were fortunate in having with us Prof. W. Weygandt, of the Psychiatric Clinic at Hamburg, and he demonstrated in a clear and convincing manner that the therapeutic attack upon that nightmare of psychiatry, general paresis, was progressing by means of the new malarial treatment inaugurated by Wagner v. Jauregg at Vienna, whose results had been spoken of in the neuropsychiatric pilgrimage of which I have spoken.

Amsden of our society gave us in March of 1923 a revised guide of the Study of the Personality which some years previously he had elaborated with Hoch, and the same evening we had lantern slides from Bloomingdale Hospital regarding certain motility changes in the gastrointestinal tract, particularly in manic depressive and schizophrenic patients.

The Mental Hygiene Association and the extension of its demonstration clinics was presented by V. V. Anderson at our April meeting and in the meeting of November Dr. Campbell gave us a delightful appreciation of certain aspects of Dr. Jung's psychological studies as he had come in contact with them in the past summer in England.

Little and Potter outlined some of the work being done with the feebleminded at Letchworth Village.

Finally, at our last meeting, we had a stimulating and interesting excursion into the realms of pure logic with a demonstration of his anthropometer by Count Korbitzsky, from which some of us have not yet recovered our usual composure.

With this bare outline it may be seen that our scientific sessions have not been without some variation at all events. I trust that, as you helmsman, they led you into ports of interest and profit, for without your generous support I would not have been able to do so much. Any inadequacies of accomplishment I lay at my own door. For your generous attention I am profoundly grateful.

64 West Fifty-sixth Street.

Segmental Cerebral Monoplegia with Jacksonian Epilepsy Due to a Subcortical Glioma*

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Paralysis of one extremity or of a part of one extremity if due to a cerebral lesion is always cortical because a lesion of the internal capsule no matter how small may be said, for practical purposes, always to produce a hemiplegia or a hemiparesis. A monoplegia or segmental monoplegia is usually due to a cerebral neoplasm although occasionally a vascular lesion produces it (1). Injuries to the brain or a cerebral abscess may bring about localized paralysis of an extremity. The history of the onset is extremely important although not entirely diagnostic; a sudden onset usually means a vascular lesion although in the case to be reported the initial symptoms were sudden in their onset and then slowly progressive.

Spiller in a recent article (2) reported four interesting cases of the condition under discussion; three of them were due to a cerebral neoplasm and the other was vascular in origin. The onset was acute in one of the cases of brain tumor.

We present the following case because of the relative infrequency of a segmental cerebral monoplegia and because the onset was of such a nature as to make the diagnosis in the early stages somewhat difficult.

Case—A white male, sixty years of age with a negative family history gave the following story of his illness: On the last Sunday in September, 1923, while walking, apparently in good health, he felt a stinging sensation on the back of the left hand, and the hand and fingers became suddenly weak. Four weeks after the onset he had a convulsion limited to the left hand and arm; in his attack the thumb was sharply adducted and the fingers flexed and after a few minutes the convulsion became a clonic one. He had three attacks within an hour. After the first convulsions the frequency was about every other day; later on he had about one fit daily until he finally had as many as six in twenty-four hours. The first spasms involved the arm and forearm but in the last few weeks only the hand was implicated.

Examination on November 5, 1923: Movements of the fingers and thumb of the left hand were practically nil. Extension and flexion of the wrist were possible but were weak. All the deep reflexes were present and normal. Pain, touch, vibration, touch localization and the sense of position were normal throughout. During the examination the man had a Jacksonian fit limited to the left hand. The attack lasted about three minutes and consisted of clonic movements in flexion and extension of the wrist and fingers.

At this time he was referred to the University Hospital where examination of the eye grounds and fields, blood, spinal fluid, urine and rontgenogram of the skull proved negative.

Clinical course and outcome: By the end of November movements of the wrist were extremely weak and pronation and supination of the hand were performed with difficulty. Flexion and extension at the elbow showed a fair preservation of power. At this time the deep reflexes on the left side of the body were increased although Babinski's sign was not obtained. Sensation remained normal. The number and severity of the Jacksonian fits had decreased. Occasionally during his stay in the hospital twitchings of the left side of the face were noted. Cerebrospinal fluid pressure was 18 mm. of mer-

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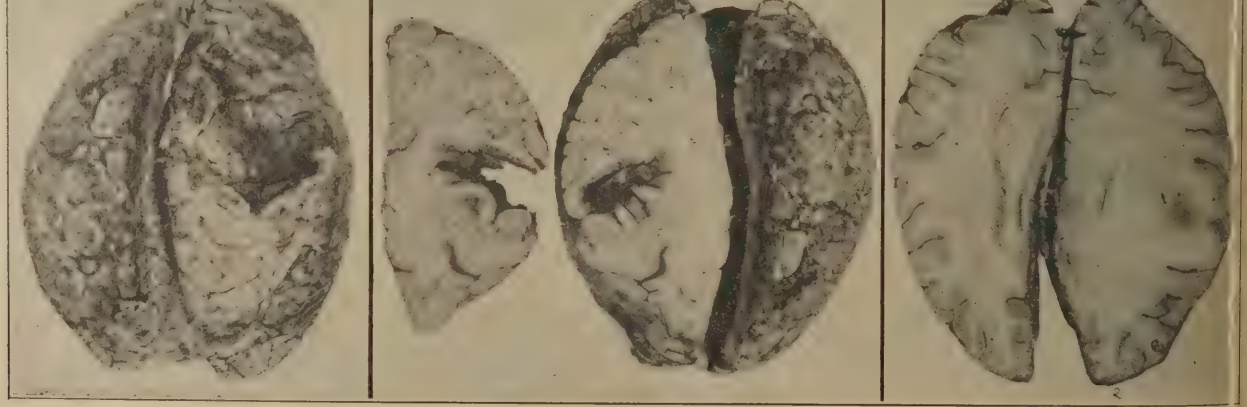

Fig. 1 Fig. 2 Fig. 3

Fig. 1.—Showing tumor as it appeared after removal of brain. A transcortical incision was made at operation exposing part of the neoplasm.
Fig. 2—Showing tumor after section of right cerebral hemisphere.
Fig. 3.—Tumor (x) at a lower level. Note enlargement of right cerebral hemisphere as compared with left.

cury; after compression of the jugular veins the reading on the spinal manometer was 36.

The man was referred to Dr. C. H. Frazier who performed a craniotomy exposing the right motor cortex. A large, subcortical glioma was found which was irremovable (Figs. 1, 2 and 3). The patient died two days after the operation.

COMMENT AND SUMMARY

This case presented certain diagnostic difficulties; the suddenness of the onset in a man of sixty without a preceding history suggestive of a cerebral neoplasm would naturally lead one to suspect the presence of a vascular lesion. The presence of Jacksonian epilepsy, however, pointed to an irritative lesion of the cortex and while this may occur as the result of cerebral thrombosis it is much more frequently seen in neoplasms or other irritative lesions of the cortex.

The diagnosis of cerebral neoplasm was made but operation was not advised at first. If the case improved it would make a vascular lesion almost certain whereas the progression of the symptoms would clinch the diagnosis of tumor. In a relatively short time (two or three weeks) paralysis gradually increased and the reflexes on the left side of the body became exaggerated. An operation was no longer postponed and was performed about three and a half months after the onset. It was hoped that an endothelioma would be found, but unfortunately for the man an infiltrating glioma was discovered. The general symptoms of brain tumor including choked disc were never present in this case.

It is remarkable, although quite characteristic of cerebral gliomas, that the tumor attained such great size without producing the ordinary symptoms of brain tumor, and without causing more positive physical signs. The tumor was just below the cortex and consequently involved the fibres originating from the motor cortex rather than the cortex itself.

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Modern Conceptions in Hospital Psychiatric Practice

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The chief purpose of this paper is to discuss briefly methods in the care and treatment of psychiatric patients, largely along progressive lines, fully realizing that ideal conditions for its application do not at present exist. However, now that our citizens at the polls have rendered favorable decision in passing the bond issue, we may hope for better opportunities for work along more constructive therapeutic lines.

From the beginning of time we have mention of the distress and difficulty of mental derangements, but it is not my intention to go back or review from the Garden of Eden period (for Cain is said to have grown jealous of Abel's success, and knowing this it is logical to infer from the nature of his act he was deranged) to the present day, but rather to accept the therapy used in the past as good and in keeping with the teaching of its time.

The practice of medicine today is becoming more and more specialized. Thus, in the branch of psychiatry with the present day conception of twenty-one types of illnesses, why would it not be wise to classify patients more strictly according to diagnosis, and produce specialists in manic depressive insanity, dementia precox, general paralysis, and other conditions, the patients receiving the benefit of such specialized treatment.

Outside of syphilitic disorders and a few clear cut toxic illnesses, we are not yet overwise as to the cause of mental derangement, thus making it very difficult to direct the treatment other than in a gun-shot type of manner with the hope of hitting right. In illnesses where the cause is not clear our efforts must be to determine if the body is normal and functioning properly, with the idea of making it so, as nearly as possible, if found otherwise. A searching physical examination should be started at once, making use of every test to find and eliminate possible trouble.

More attention should be given to the abdominal conditions, particularly the presence of malformations of the intestines, the rapidity or retardation in their action, and perhaps we may find a toxemia that can be relieved with curative results. The x ray should be in more universal use to ascertain the condition of internal organs, so that where indicated selective surgery may be performed. Make a study of the external secretions as well as the internal, which are attracting such wide attention, and determine if possible if any are offending either by omission or commission, for it is only along these lines that we can hope to progress and help the patient.

Dental work has come into its own of late, and while I do not advocate wholesale extractions, yet it is certain that more attention can well be paid to the teeth, getting rid of foci of infection here, as in other parts of the body, not only putting the mouth in a healthy state but supplying teeth so that food will be properly masticated.

In many toxic disorders and excitements patients often do remarkably well under treatment in continuous baths, while the depressed inactive states require a more stimulating measure, such as hot and cold sprays, etc. In dropsical conditions, steam baths often help reduce edema, and through cutaneous elimination aid in relieving the burden carried by the cardiovascular renal system with marked comfort and ease to the patient.

There is division in the ranks regarding the value of psychoanalysis; it has strong advocates and those who are, to say the least, only lukewarm about it.

Perhaps the subject can best be disposed of by granting equal rights, letting those favor it who choose, and vice versa. At any rate if actual benefits and results are obtained by its use, it certainly is to be recommended. If in bringing to consciousness hidden conflicts that are causing mental illness a normal healthy adjustment can be effected, naught can justly be said against it, and we all should be for it; but to let a person know his trouble without ridding him of it or shifting its location is of little worth. In like manner, as open confession is good for the soul, so should psychoanalysis be for the troubled mind; though it is not applicable or needed as a routine measure, yet in certain well selected cases there is little doubt that it has great value and should be used.

Whether one chooses to practise psychoanalysis or not, I think all must admit that it is worth understanding that we may better size up our cases and in many instances without going into the depths of the thing be better able to advise the patient wisely.

Our patient having run the gauntlet of medicine and surgery, become acquainted with Volsteadism, taken his dose of mental catharsis, either knowing about or getting rid of his complexes, and is found physically fit, he is now ready to go to work. In the hospital we term it occupational therapy, which is something of routine value and should be given in more liberal doses. Even while the mind is warped, with a healthy body much can be accomplished. When the patient is at work his attention becomes centred upon what is being done and directed away from his troubles, which if not curative will greatly lessen the irritation and improve conduct. This conduct disorder problem is no small matter, for it disturbs the hospital population equally as much as it does in outside life, though in our case there is no recourse to law or discipline, being entirely a matter of treatment, for the irresponsible cannot be held accountable for their acts.

In general it is well to remember that for depressions we use work calling for thought concentration; for the disturbed, a more monotonous task; for the erratic, a work calling for more sustained effort and application; for the indifferent, where comes the real task, try more stimulating processes, with frequent changes and variety to arouse interest. A carefully arranged system of promotions as the patients improve under training must be maintained, along with systematized recreational hours as a stimulus for effort, and eventually help the patient along the line towards home or at least to be of aid in hospital productive industry.

It therefore becomes our duty to work along progressive lines, making use of every phase of therapy adaptable to the case that carries even hopes of bringing about complete or partial results. Complete restoration to health in those mentally ill would be ideal but unfortunately with our present knowledge this is impossible; however, there is much that can be accomplished towards partial results, for if we can direct those with troubled mind to continued usefulness the burden of care and maintenance will be greatly lessened, and the individual healthier and happier in leading what at least approaches a normal existence and selfrespect.

An Unusual Case of Sensory Disturbance of the Rectum Following Operation

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Case.—V. H., male, clerk, single, fifty-three years of age. His venereal history was negative, previous and personal history were irrelevant. He presented himself at the rectal clinic with a complaint dating back nine months, which began with an irritation and sense of discomfort about the rectum unrelated to defecation. The bowels moved daily, there was no bleeding, discharge or protrusion. He consulted an advertising doctor, who made a diagnosis of hemorrhoids and promised to cure him by operation to be done under local anesthesia which would only lay him up over night. To this the patient submitted, and left for his home the next morning. Rectal hemorrhage followed for which it was necessary to call a physician. He suffered from chills, fever, diarrhea, tenesmus and weakness, and stayed in bed eleven days before his symptoms subsided, when he was pronounced cured of piles. But there developed a most distressing sensation of cold in the rectum, which radiated to the buttocks and thighs, increased in degree when he expelled flatus, and felt, according to his description, like the passage of an icy blast through the bowel. This persisted with only slight remissions since his operation and made him feel miserable, depriving him of rest and preventing him from concentrating on his work. He found it hard to move the bowels, felt distended, and complained of abdominal pains. Examination showed hyperesthesia of the skin about the anus, inner side of buttocks and thighs, but no disturbance of the temperature sense or deep reflexes. Urine, blood and feces were negative. Inspection of the rectum disclosed a firm, annular stricture two and one half cm. from the anus, thickening of the rectal walls and erosions and ulcerations of the mucous membrane.

Sensory disturbances of the lower bowel are not uncommon in chronic proctitis and other pathological rectal states, and sometimes follow operations when there has been much trauma or infection of the parts. They take the form of numbness, tingling and hyperesthesia of the region of the coccyx especially upon sitting, but are usually temporary and pass off when the divided nerves have become regenerated and scar tissue softened. The case reported here is an unusual form of paresthesia secondary to operation complicated by stricture of the rectum.

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The Adrenal Cortex and Medulla in Respiration Versus the Bane of Medical Progress, the Diffusion Doctrine of Physiologists

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It would be difficult to find in the whole realm of human thought a more imperative need than that of establishing on a sound basis the function of respiration, meaning thereby both pulmonary respiration and tissue oxidation. Although the diffusion doctrine satisfies most physiologists, being still taught in our medical schools, those of us who minister to the sick and who need to fathom morbid states to improve our means of relief, find in this doctrine nothing but disappointment. The reasons for this will now be adduced and the elements of a different and more helpful interpretation submitted.

DIFFUSION DOCTRINE

The fallaciousness of this doctrine asserts itself on all sides. It fails utterly to explain the respiratory ratio. As far back as 1905, C. R. Barnes (1), professor of plant physiology in the University of Chicago, wrote, after examining the best of our textbooks: "The respiratory ratio has proved a veritable will-o'-the-wisp, leading investigators into a bog where their labors and their thinking were alike futile. For, as a sign of what is going on within, the respiratory quotient is absolutely valueless." A distinguished English physiologist, Leonard Hill, also wrote soon after (1906): "It is impossible to give a satisfactory account of the gaseous exchange between the blood and the alveolar air." Its present status is well shown by the statement of an editorial writer in the *Journal of the American Medical Association* of June 7, 1919, that "an answer to the question as to how the all important oxidations in the body are brought about is almost as obscure today as it was a hundred years ago." As to its bearing on pathogenesis, Halliburton wrote in the last edition of his textbook of physiology (1921) that "knowledge of tissue respiration is so scanty that we can say but little about its pathological bearing."

Practitioners in all fields of medical work must fail to realize what this means to the welfare of those who entrust their lives to them; otherwise they would urge physiologists to turn aside from a theory which, from its very incipiency has only afforded an obstacle to medical progress incomparably greater than any that could be devised. I have submitted elsewhere (2) that it has kept from pathologists, owing to its identity as a fundamental function, the pathogenesis of even such commonplace phenomena as fever, hyperthermia, autolysis, the death dealing gamut of infectious diseases, over one hundred strong. The cardiovascular diseases, exceeding in death rate all others nowadays, can all be traced originally to perversions of nutritional oxidations. This applies as well to cancer and, in fact, to the entire range of pathogenicity. Psychiatry and the general neuroses have suffered as much as any other branch of medical knowledge. How could they thrive as far as the organic side of nervous disorders is concerned when the very *deus ex machina,* the nature of the nerve impulse, remains unknown?

In truth, the diffusion doctrine has been under fire ever since 1856 owing in part to the discordant data afforded by instrumental methods. Armand Gautier, professor of physiology in the Paris Medical Faculty, over thirty years ago, deemed it wrong for physiologists to continue to see in the respiratory phenomena but mere results of diffusion of gases through inert membranes. Indeed, many discrepancies besides those of instrumental origin have branded the theory as unsound. Why, for instance, disregard Paul Bert's (3) observation that the absorption of oxygen by the pulmonary blood persists when the pressure of this gas is almost *nil;* or Müller's that a strangulated animal exhausts the air in its lungs of all its oxygen; or those of Setschenow and Holmgren (4), Zuntz (5) and others, who found only traces of oxygen in the arterial blood of asphyxiated animals?

Evidence has steadily accumulated in recent years also to the effect that the oxygen tension in the arterial blood can be considerably higher than in the alveolar air. This was frequently noted by the Anglo-American Expedition to Pike's Peak in 1911, and also by the Mount Everest Expedition which, as stated by Haldane (6), "bore out the oxygen secretion theory," advanced by Professor Bohr, of Copenhagen, in 1891 and sustained by Haldane, Vaughn, Lorrain Smith, the Oxford School and others, which

attributed to the lungs the power of clutching oxygen from the air in the alveoli and to force it into the blood.

The perpetuation of the diffusion doctrine in the face of all these invalidating facts was due, however, to an essential feature of the whole problem, i. e., the inability of the physiologists to identify the nature of the secretion capable of carrying on this function.

ADRENAL MEDULLA IN RESPIRATION AND TISSUE OXIDATION

In 1903 (7) I submitted on the basis of much evidence, that the secretion of the adrenals supplied the needs of the respiratory process. Since then this view has been confirmed even to its details:

1. There can be no doubt that adrenalin influences actively the respiratory process. Bernstein and Falta (8), Nice, Rock and Courtright (9), Tompkins, Sturgis and Wearn (10), Sandiford (11) and others, found that it increased the intake of oxygen, the output of carbon dioxide, the volume of air breathed, the respiratory excursions of the lungs and the depth and rate of respiration. While Januschke and Pollak (12) noted that injections of adrenin in doses of one tenth mg. (one six hundredth grain) caused an increase of the respiratory excursions of the lungs, thus showing the minuteness of the quantity of the medullar principle needed to carry on the respiratory process. Nice, Rock, and Courtright also demonstrated its independence from the vascular tension when they found that adrenalin, whether injected in minute doses, causing a fall of blood pressure or in large doses, causing a rise of blood pressure, evoked an increase in the depth of the respiration.

2. Nor can there be any doubt that the process occurs in the lungs and that the adrenal secretion converts hemoglobin into oxyhemoglobin. Adrenalin was found by D. E. Jackson (13) to produce prompt dilatation of the bronchioles when these were contracted, quite independently of any rise of blood pressure, while W. E. Dixon (14) ascertained that it facilitated the free circulation of the air in the alveoli by causing the dilatation of the bronchioles referred to. Even the conversion of the venous blood into arterial blood by the adrenal product has been found to be true. Thus, Menten (15) having added adrenalin to diluted human venous blood, found that it caused an increase in the intensity of the oxyhemoglobin absorption bands. The similarity between the spectra of adrenal vein blood and those obtained from venous blood to which adrenalin was added was emphasized, Menten remarking that it afforded "unquestionably very strong evidence that it is adrenalin which is responsible for the increased amount of oxyhemoglobin that is found in the adrenal vein blood."

That this applies to the circulating blood as well was shown by the fact that adrenalin was also found in the blood and red corpuscles by Battelli (16) and Mulon (17). I had urged that the adrenal product which I termed adrenoxidase, acted as a catalyst (oxydase-catalase) in all oxidation processes. R. G. Hoskins (18) stated recently that "the disproportion between the quantity involved and the effect produced, as well as direct experimentation, indicates that adrenalin serves to catalyze some reaction in the process of fuel oxidation. It is probable that the intervention is in the immediate oxidation reactions; that is, that the substance serves as a respiratory catalyst."

3. That, as I also urged in 1903, "the oxidizing constituent of the hemoglobin sustains tissue oxidation and metabolism" has likewise been sustained by many observers. Adrenal extracts had long been known to raise the temperature and accelerate metabolism simultaneously. More recently, Sandiford (11) found in seventy-three experiments in endocrine patients that seven and a half minims of adrenalin invariably raised the basal metabolic rate. This was preceded by a rise in the respiratory quotient, according to Tompkins, Sturgis and Wearn (10) thus showing clearly a connection between the two processes, while it proved inexplicable, as stated by Boothby and Sandiford (19), by a mobilization of glucose. Large adrenal grafts may cause so great a rise of temperature as sometimes to cause death, as observed by Jaboulay (20) and others. Malignant adrenal growths, regardless of histological structure, may also, according to Israel (21), run a febrile course independent of any fever producing complications. The rise of temperature can be produced, however, by doses of adrenin within the powers of the adrenals to secrete (22). Accelerated metabolism was also shown by Tompkins, Sturgis and Wearn (10) when used in not too great doses (vasoinhibitory) or too small (inadequate) doses and, according to Addis, Barnett and Shevky (23), to be accompanied by an increased excretion of urea.

It might be urged that all these phenomena are purely pharmacological, i. e., caused by the adrenal preparations acting as drugs. That this is not true, however, and that all the respiratory and metabolic phenomena produced by adrenin (meaning thereby the secretion of the medulla of which epinephrin or adrenalin is the active principle) represent exacerbations of a corresponding function is shown by the fact that removal of the adrenals evokes contrary effects. Thus, Brown-Séquard and many physiologists since have noted a decline of temperature in animals deprived of their adrenals; it is also a leading symptom in Addison's disease along with those of slowed metabolism. The basal metabolic rate in adrenalectomized cats, carefully controlled by Aub, Forman and Bright (24), showed a reduction of twenty-five per cent., while the same operation in rabbits was found by Bevier and Shevky (25) to cause a depression of the excretion of urea.

Such perfect balance between the effects of adrenin on the one hand and the results of removal on the other, shows clearly that we are dealing with a physiological function of adrenin, while the influence of the latter on metabolism indicates that it is a dominant factor in tissue respiration.

A suggestive fact must now be emphasized, i. e., that the few physiologists who give special attention to the ductless glands (the many who do not merely adopting the opinions of their endocrinological colleagues) have failed to bring to light the functions of the adrenals. Swale Vincent (26), professor of physiology at the University of London, for instance, concluded as late as 1922 that "the adrenal medulla appears to be of no importance, the functions of the adrenals being probably wrapped up in the cortex."

while as late as March, 1924, R. G. Hoskins (18), professor of physiology at the Ohio State University, also wrote concerning these organs: "Despite a very large body of careful observations, these organs remain a mystifying puzzle." If this be true, all the immense labor devoted to the adrenals recorded by workers in all branches of medical science, pure and applied, since 1849, when Addison described the disease which bears his name, has remained sterile. So unthinkable a record can only be explained in one way in the light of the data submitted: physiologists did not take into account the direct connection between the adrenals and respiration and failed in every other direction.

ADRENAL CORTEX IN TISSUE OXIDATION

The functions of the cortex are deemed unknown by the physiologists, we have seen, even though this structure is regarded by them as probably the active portion of the adrenals. Indeed, its essential rôle in the vital processes is clearly shown: by the fatal effects of its removal unless supplemented by accessory organs, as in the rat; by its increase in size during pregnancy; by its great size during infancy and development; by its direct connection with the gonads and the phenomena of puberty and secondary sex characters; by its remarkable stimulation, when the seat of certain tumors, of growth; by its remarkable tendency to undergo degenerative changes after burns, venoms, the administration of certain poisons, and other conditions.

The personal view that the cortex cooperates with the medulla in carrying on tissue oxidation, was only reached last year (1923) after a comprehensive study of the lipoids, long known to be important features of the chemistry of the cortex and of all tissues, and also a revision of the labors on biochemistry and functions of the leucocytes, which occupies over one hundred pages in my work on the internal secretions. In the present paper, however, I can only cite but a fraction of the evidence available—just enough to bring out the salient points of the function I attribute to the cortex.

Each adrenal is composed, as is well known, of various zones, but for our purpose it will suffice to recall that the organ consists, in man, of columns of polygonal cells directed from the outer capsule towards a common centre, as are the ribs of a palmleaf fan towards its stem. Nine tenths of these columns constitute the cortex and the remaining tenth the medulla. The latter, in turn, drains the whole organ of its blood, the terminal canal of which, typifying the stem of the fan, consists of the adrenal vein.

A striking feature of each adrenal is the relatively enormous volume of blood which passes through it, i.e., six times its weight in blood traversing the organ every minute. It is supplied by the large suprarenal arteries, which penetrate each adrenal through its external capsule and subdivide into smaller vessels, which form ultimately a very close capillary network in the cortex. The blood then passes to the wide sinuslike spaces in the medulla and finally into the adrenal veins, which carry it into the inferior vena cava.

The relation of the adrenals to the red corpuscles suggests itself when we realize that the contents of the latter is similar to that of the cortex and medulla combined and that the adrenal secretion likewise contains these bodies. Howell, in his textbook (1923) after describing the stroma and hemoglobin of the red corpuscles remarks, for instance, that "great interest attaches to the presence of the lecithin and cholesterin whether these substances are found in an external membrane or in a stroma permeating the corpuscle."

As to the adrenal cortex, it was also found to contain lecithin, a fat rich in phosphorus, by Bernard and Bigart in 1902, Mulon in 1903, and many other investigators since, while cholesterin, or better cholesterol, a monatomic alcohol, has received considerable attention in recent years as a prominent constituent of the cortex. While its presence in this structure has been shown by Elliott and Tuckett (27), Adami and Aschoff (28) and many others, Chauffard, Laroche and Grigaut (29) have gone so far as to contend that the cortex is the actual source of cholesterol, so marked are its fluctuations in this structure in pathological processes. The cortical columns are filled with these lipoids which form columnar rows of brilliant yellow cells, directed, as we have seen, toward the central medulla. As stated by Goormaghtigh (30), after examining the cortices of many soldiers killed while in normal health during the World War, the cortex appears to act as a storehouse for lipoids.

What is the origin of the lipoids in the adrenal cortex? Granting, pending further research, that the cholesterol is formed in the adrenal cortex as contended by Chauffard, Laroche and Grigaut, what is the origin of its lecithin? In 1903 (31), I included the leucocytes among the ductless glands and stated that their granules were "products of an intracellular metabolic process and represent a true secretion." Since then French investigators refer currently to leucocytes as such. Chauffard (32) for instance held recently (1923) that "the leucocyte must be considered as a true monocellular endocrine" forming in the aggregate "a multitude of ambulating laboratories." The cortex, from my viewpoint, is supplied with its lecithin by eosinophils which course through it with the large quantity of blood which traverses the organ.

The presence of lecithin in the granules of eosinophils was observed thirty years ago by Kanthack and Hardy who stressed their bright greenish lustre. Various investigators have confirmed this observation. Pappenheim (33) having ascertained that eosinophil granules were neither neutral fat nor cholesterol, Stassano and Billon (34) identified them as lecithin. That these leucocytes secrete their granulations was first pointed out by Ehrlich and his opinion has been sustained by numerous histologists. Sangree (35) and others have observed the actual extrusion of the eosinophil granules into the plasma.

The manner in which the secretory products of the cortex are merged with the medullar or chromaphil secretion cannot be discussed here owing to lack of space. All three products are found in the blood of the adrenal veins. While Gottschau, Biedl and many others have called attention to their presence therein, the proportion of cholesterol in the adrenal vein was found by Porak and Quinquaud (36) to be much greater than in the carotid, femoral and other great vessels.

Adrenin, lecithin and cholesterol being thus found in the adrenals, the adrenal veins and the red blood corpuscles, what is the relationship between these corpuscles and the three agents which constitute the adrenal secretion?

While, as we have seen, the medullary secretion, adrenin, reaches the pulmonary alveoli to become, in the presence of the air, converted into adrenoxidase, the manner in which it is conveyed to the lungs is still *sub judice,* as far as the vena cava blood is concerned. The fact, however, that Gley was unable to find adrenin in the caval blood plasma suggests that it may be absorbed in the adrenal veins by the spongy stroma of the red corpuscles, along with what lecithin and cholesterin they need to make up their deficiency in these three substances after circulating throughout the body. The red corpuscles are thus continuously kept fit to carry on their all important functions.

The rôle of adrenoxidase, lecithin and cholesterin in the tissues will require a special article. I will submit therein that lecithin, owing to its phosphorus, is the active thermogenic agent when oxidized by the adrenoxidase, and that cholesterol is not an antiseptic as its antihemolytic properties have led investigators to believe, but a regulating moderator of thermogenesis in all tissues. The red corpuscles will be shown also to be endocrine glands, the blood platelets representing their secretory product, and to carry on, as messengers kept fed and fit by the adrenals, pulmonary respiration and tissue oxidation.

CONCLUSIONS

1. The diffusion doctrine of physiologists, though studied by them over a century, still fails to explain pulmonary respiration and tissue oxidation despite the paramount importance of these allied functions.

2. As a fundamental function tissue oxidation merges with and influences all other functions; the inability of physiologists to explain it thus compromises and invalidates all fields of medical knowledge, including clinical medicine and therapeutics.

3. The adrenals, as urged by the author for over two decades, afford a foundation for an interpretation of pulmonary and tissue respiration which various branches of medicine, including physiology, have clearly sustained by direct evidence.

4. The admitted inability of physiologists to discover the functions of the adrenals, after seventy-five years' effort, while the experimental evidence they publish sustains the author's interpretation of pulmonary and tissue respiration, afford strong testimony to the effect that this interpretation points at least in the right direction.

5. To disprove the adrenal doctrine the physiologists must explain, individually and collectively, the effects of adrenin recorded in outline in the foregoing pages on all respiratory phenomena, and their striking concomitance; also, and otherwise than by a connection with thermogenesis, the rôle of the cortical lipoids, the phospholipoids in particular.

6. If the physiologists, upon whom clinicians depend for their knowledge of all normal functions, cannot disprove the participation of the adrenals in respiration, the claims of suffering humanity will surely cause them to cooperate, with their colleagues in other fields, in developing the adrenal doctrine.

7. Such a course would bring to light the great value of innumerable data now wrongly considered as sterile or obsolete—including much work by physiologists in endocrinology—and thus supply medicine as a whole a solid foundation such as a sound doctrine of respiration and metabolism would furnish for rapid progress in all directions.

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The Clinical Classification of Goitre*

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From a considerable experience with postgraduate medical students and a rather ample goitre clinic at the Postgraduate Hospital, it has seemed to the writer that one of the chief difficulties in the diagnosis of thyroid dysfunction by the general practitioner is his inability to classify or to make a nosological entity of an individual presenting symptoms referable to disturbed thyroid function. Recently I had occasion to attend a medical meeting where elaborate statistical charts were presented and saw listed and heard expressed such terms as colloid goitre with basal metabolic rates of 40, 50 and 60. Undoubtedly the essayist on that occasion had a perfectly clear understanding of his own charts and what he was expressing thereby but to the ordinary auditor the two terms colloid goitre and plus basal metabolic rates seemed incompatible.

Goitre or struma means a visible change in the external appearance of the thyroid gland. Clinically it represents an easily determined enlargement of the organ. It is usually employed indiscriminately to connote some change in the secretory activity of the gland. Strictly speaking the term goitre means very little. It is only by an etiological relationship to various clinical syndromes from myxedema to hyperthyroidism that it becomes important and occupies an unusually prominent place in diagnosis.

Disturbances of thyroid function may be viewed from many angles—from the histological, the pathological, the clinical and from the nosological. From the clinical point of view the essential feature will be the presence or absence of the evidence of hyperthyroidism or the presence or absence of the evidence of hypothyroidism. Therefore the first consideration to be made of a particular patient at the time of examination is whether the patient presents the evidence of hyperthyroidism or hypothyroidism. We may say then that we have goitres with hyperthyroidism, goitres with normal secretion and goitres with hypothyroidism.

There are, however, certain types of thyroid dysfunction which cannot readily be placed in such an arbitrary grouping and it has seemed best for our purpose to propose a more extended classification. We realize that there is no clear cut line of demarcation between some of them but for clinical simplicity they may be so separated. It is essentially a clinical division and the value of such grouping is that as soon as the diagnosis is arrived at the treatment of an individual case becomes definitely determined and along well defined lines of therapy. (Chart I.)

The histological unit of the thyroid gland is an acinus lined with cuboidal or low columnar epithelium resting upon a basement membrane and containing colloid material. In the interstitial tissue of the gland are various groups of cells of embryonic origin known as the interstitial cells or embryonic rests of Cohnheim. In the histological sense the thyroid unit may depart in three definite ways; 1, by an hypertrophy of the acinar epithelium, giving a parenchymatous cell type; 2, by an increase or diminution in colloid material, giving a colloid type and, 3, by the development and expansion of new alveoli from embryonic tissue, giving an adenomatous cell type. In the proliferation of the acinar cells or in the changes in the amount of colloid material we have changes occurring in preformed thyroid tissue, whereas in the development of new acini from embryonic tissue we have the creation of an entirely new tissue and one that was not preformed in thyroid substance. These anatomical and physiological states are parallelled by clinical states representing a pure hyperthyroidism from hyperplasia of the acinar cells, a pure hypothyroidism from atrophy or fibrosis of the acinar cells and thirdly, a state of dysthyroidism as the result of the development of adenomatous tissue. The acinar cells are the ultimate secreting units and from these cells is stored the colloid material. Within the colloid material is stored iodine for the elaboration of thyroxin, the colloid material being an accessory material for the production and storage of thyroxin.

It follows then that the purpose of the thyroid is to elaborate thyroxin and to maintain a continuous discharge of it into the circulation (Plummer). Thyroxin is ultimately distributed to the individual cells of the body and is the activator of their biotic chemistry and regulates the rate of internal respiration whereby the balance between the anabolic and catabolic processes of cellular activity are maintained. The elaboration of thyroxin is directly due to the cellular activity of the acinar cells in conjunction with the colloid material working upon a basic iodine substance—iodine constituting forty per cent. of thyroxin.

The more active the epithelial hyperplasia the less colloid material and iodine are stored in the thyroid as the amount of iodine content varies with the amount of colloid material present.

There is less iodine in the gland of hyperthyroidism than in the normal gland but Reid Hunt has shown that there is more iodine in the blood as it is more slowly excreted from the system contrary to its usual rapid elimination. Marine has shown that colloid goitre contains more iodine in the whole gland than the normal thyroid but weight for weight colloid goitre contains less iodine than the normal thyroid, so that although in the colloid goitre there is more iodine, this is due to its enlarged bulk and not that the individual acini contain more iodine.

It is interesting to digress and to consider the two essential ways in which thyroid secretion may be changed. On the one hand we have acinar cells which are the direct secreting individuals of each secretory unit and we have interstitial cells or fetal

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cells of Cohnheim, which are scattered more or less throughout the gland. It is an accepted fact that the degree of thyroid secretion directly parallels the activity and hyperplasia of the acinar cells. Accordingly, there is direct relationship between the amount and degree of secretion and the amount and degree of hyperplasia. Wilson, a number of years ago, was able to write the clinical picture of a case of Graves's disease from an examination of the histological sections. The acinar cells increase in number by three well defined methods: 1, by individual proliferation of the cells leading to an increased number of cells in the acinus with loss of colloid material; 2, by infolding or invagination and papillomatous hyperplasia of the acinar cells and; 3, by budding with the formation of independent acini. The more increase there is in acinar cells the less colloid material so that again there is a certain parallelism between the hyperplasia and the amount of colloid material present. If the interstitial cells proliferate they produce individual discrete tumors, socalled adenoma, which have their own specific secretory activity. By proliferation of the interstitial cells a single or multiple adenoma may be produced and the degree of formation of adenomata may bring about atrophy and destruction of normal thyroid tissue until practically the entire thyroid is replaced with tumor formation and such thyroid tissue as may be present will exist in the posterior capsule or at the poles. A less frequent condition has been referred to by Goetsch which he defines as diffuse adenomatosis, where there is a proliferation of the interstitial cells more or less throughout the thyroid producing practically an adenomatous replacement of the thyroid tissue.

It is interesting to look at goitre from another angle. The thyroid is essentially the regulator of metabolism, defining metabolism as the sum total of all changes that occur in the human body. This would suppose that the thyroid acts as an independent regulating mechanism. A further consideration shows, however, that among the endocrines there is a duality of function and if one group loses its function it exerts an influence upon the others. Hence any disturbance of the thyroid must also take into consideration whether the symptom complex exhibited is a monoglandular affair pertaining only to the thyroid or whether it is a pluriglandular affection in which other symptom groups are introduced representing the disturbance of other glands than the thyroid. For example, Murphy in his clinics a number of years ago repeatedly alluded to the fact that an undescended testicle was often accelerated in its descent by the giving of thyroid extract, particularly if given previous to the eighth year. The reaction of the patient with hyperthyroidism when adrenalin is injected is the basis of the Goetsch test and points to the fact that the entire sympathetic system is hypersensitive in the presence of increased thyroid secretion. One is warranted in believing that every tissue in the body is in a state of oversensitization under the continuous influence of hyperthyroidism. The presence of glycosuria in hyperthyroidism is not a mere casual observation but is a very definite and sequential symptom as the result of disturbance in thyroid function.

When we consider hyperthyroidism we should determine whether there is a pathological or physiological change in the thyroid gland. An exaggeration of normal function may exist from a variety of influences and this hyperfunction might exhibit itself in variations in the quantity of secretion or in its quality and hyperthyroidism might exist as the result of an increased functional capacity of the gland without intrinsic pathological change. On the other hand, we may have a pathological gland but with a thyroid secretion that is normal or in excess or diminished.

The measuring of the sum total of metabolic changes in the body under the socalled basal metabolic test has enabled us to determine accurately the degree of hyperthyroidism. It is to be remembered, however, that the basal metabolism is higher than normal in youth, in fever, in lymphatic leucemia and in pernicious anemia, occasionally in cardiac disease and more rarely in severe cases of diabetes. It is also lower than normal in old age and wasting diseases, and inanition is capable of depressing the basal metabolic rate for a long continued period of time. There are in addition to the thyroid gland three other glands that are supposed to have an influence on metabolism. Of primary importance is the suprarenal gland and less so the gonads and the pituitary gland. The gonads apparently achieve their influence upon metabolism through their association with the thyroid rather than directly, for the lowered metabolism following castration is apparently due to a depression of thyroid secretion rather than directly to the gonads.

CHART I

Clinical Classification of Goitre

GOITRES WITH HYPERTHYROIDISM.

1. Goitre of adolescence.
   Physiological gland with overfunction.
2. Goitre of Graves's disease.
   Pathological gland with overfunction and dysfunction.
3. Goitre of adenoma—adenomatosis.
   Pathological gland with overfunction.

GOITRES WITH HYPERTHYROIDISM OR NORMAL THYROXIN SECRETION.

1. Simple, endemic goitre and colloid goitre.
   Pathological gland—secretory activity normal or diminished.
2. Goitre of adenoma.
   Pathological gland—secretory activity normal or diminished.

Let us now consider the clinical groups that I have alluded to and see if we can establish their individual characteristics (Chart I). Two of my associates—Selinger and Moolten—have recently made a study of the goitre of adolescence and have published their conclusions. I am availing myself of quoting liberally from their papers. This particular type of goitre, sometimes called physiological hypertrophy and hyperplasia or the goitre of puberty, is associated with a mild or slight hypertrophy and hyperplasia of the acinar cells. As a rule there is a varying degree of hyperplasia of the acinar cells with infolding; rarely papillomatous proliferation. The colloid material may be apparently normal in amount or slightly diminished depending upon the degree of hyperplasia. This type of goitre is peculiar in that it manifests itself during adolescence. If one desires to study the goitre of adolescence on a large scale he has only to stand at any of the cross-

town streets between Fourteenth and Forty-second Streets at eight o'clock on any morning of the year and see the army of adolescent young women going forth to work, many of them showing slight thyroidal enlargement and many of them exhibiting the clinical syndrome and symptomatology of slight hyperthyroidism.

In April 1917 Marine (1) made a survey of goitre among the school children of Akron. 3872 girls were examined, with the following results:

Normal thyroids	1688	43.6 per cent.
Slightly enlarged thyroids	1931	49.9 per cent.
Moderately enlarged thyroids	246	6.3 per cent.
Markedly enlarged thyroids	7	0.2 per cent.
Among these there were adenomas	39	1.0 per cent.

If a group of these persons were taken and arranged from left to right in regard to the severity of their symptoms we would have at the left hand extremity those nearly akin to the normal and at the right hand end those that showed marked hyperthyroidism and were potentially a Graves's disease. Most of these cases undergo a spontaneous cure, as soon as the physiological demand for increased thyroid secretion for trophic purposes has ceased.

Moolten writes that the consensus of scientific opinion in this country tends to regard this type of goitre as a deficiency disease. Plummer, Kendall, Rogers and Marine and others have irrefutably shown that iodine is essential to normal thyroid activity: that subiodism produces structural as well as functional changes in the thyroid gland: and that the physiological action produced by thyroid extract is always proportional to the iodine content. In the light of this knowledge one is constrained to accept the view that adolescent goitre is due to a relative lack of iodine.

They all exhibit plus values in their basal metabolism and the essential element in their thyroid instability is a variation in the iodine metabolism of the gland. Various bodily factors tend to produce a definite, subnormal species of humanity, in whom there is an insufficient amount of thyroid extract thrown into the circulation to carry on a normal metabolism. In consequence, the only source of thyroid extract—the thyroid gland—"is tapped" and in response to the call the gland becomes overactive and hyperplastic. There is a peculiar physical stature to these patients. They are not of robust type, their heredity is usually defective in that they were not born with strong stable organisms. They are thin, emotionally unstable, possessing bad judgment in regard to their diet and personal hygiene. Defective nasopharyngeal apparatus is present in addition to bad teeth and other stigmata of incomplete biological development.

In the hyperthyroidism of socalled adolescent goitre there is a frequent association of pulmonary tuberculosis. We have had occasion to make a critical study of a number of cases of incipient tuberculosis in undernourished young women and have found that the majority have a slight enlargement of the thyroid with minor degrees of increased basal metabolism. In considering an increased pulse rate in young women with a clinical picture that would ordinarily suggest a mild transitory hyperthyroidism it is well to canvass thoroughly the possibility of a low grade tuberculous intoxication from an incipient phthisis. Another interesting fact is that many of the juvenile patients with slight external protuberance of the thyroid, with some tachycardia, minus or plus values in basal metabolism and with a pulmonary tuberculosis have a hypoplastic vascular system, particularly a small sized heart.

Simple goitre may be defined as one with an enlarged thyroid and no hyperthyroidism, while Graves's disease is a goitre exhibiting hyperthyroidism with exophthalmos.

The immediate cause of simple goitre is lack of iodine. Marine states that thyroid hyperplasia in this group of cases is a compensatory reaction arising in the course of a metabolic disturbance and immediately depending on a relative or absolute deficiency of iodine. If the available supply of iodine is moderately decreased there is compensatory hyperplasia initiated in the thyroid structures and hence endemic or simple goitre is essentially due to a deficiency of iodine.

The thyroid in simple endemic or colloid goitre is usually symmetrically enlarged and smooth although either lobe may be enlarged over the other or the enlargement may be located in the isthmus. On microscopic examination the acini are swollen, the acini cells are thin, flat, deeply staining, the colloid material and nonabsorbable secretions are increased and the whole picture is that of a gland producing a lessened unit of secretion. It is necessary to consider the whole gland and not a circumscribed portion. Halsted by excising portions of the thyroid induced compensatory hypertrophy in other portions of the gland and occasionally in a section from a simple or endemic goitre new acini may be seen, occasionally infolding and reduplication, rarely papillary production. This goitre occurs preeminently in the Alps, and the Himalaya regions. The most important areas in our country are the Great Lake Basin, the Cascade Mountain regions of Oregon, Washington and British Columbia. The researches of McCarrison of India have emphasized the importance of gastrointestinal infection as a goitre producing influence and stresses that the factors that give rise to goitre districts hinge around the supply of iodine and the needs of the thyroid gland for iodine, irrespective of the anaerobic pathogenicity of the intestinal tract.

Two separate and distinct pathological conditions of the thyroid gland exhibit hyperthyroidism in its most acute form, namely, the goitre of Graves's disease and the adenomatous goitre with hyperthyroidism.

The isolation in 1914 by Kendall of the active principle of thyroxin from hyperplastic thyroids gave a marked impetus to the study of the physiological action of thyroxin on the body. In 1915 Plummer formulated certain deductions as to thyroxin. In substance he stated that thyroxin acted directly or indirectly on all cells throughout the body. It is the agent that accelerates the formation of potential energy and which is available on excitation of the cells and that "hyperthyroidism is the physiological status of an individual otherwise normal when the thyroxin maintains basal metabolism above the normal." Furthermore, that all the phenomena which usually go with hyperthyroidism are always associated with an elevation of basal metabolism.

It would seem then that hyperthyroidism represents a dual condition, one in which the etiological factor is the adenomatous goitre and the other one the goitre of Graves's disease. Crotti does not believe in the duality of hyperthyroidism or in the separation of the adenomatous hyperfunctionating type of goitre from the hyperthyroidism of exophthalmic goitre.

It is interesting to note that the taking of thyroid extract or the injection of thyroxin will produce in exact similarity every symptom of the hyperthyroidism of adenoma, whereas it is impossible to produce in similitude the symptoms of hyperthyroidism of Graves's disease either from thyroid feeding or from the injection of thyroxin. This would seem to lead to the conclusion that the hyperthyroidism as exhibited in Graves's disease is in a qualitative manner different from the hypersecretion as evidenced in the adenomatous goitre.

The studies of Plummer on the effect of giving Lugol's solution for the hyperthyroidism of Graves's disease would seem to confirm the impression that the hyperthyroidism of Graves's disease is due to an incomplete or preformed molecule of thyrotoxin, for under the administration of Lugol's solution the clinical picture of hyperthyroidism of Graves's disease changes to the clinical picture that more nearly simulates that found in the hyperthyroidism of adenomata. Correspondingly there is a marked drop in the basal metabolic readings within two or three days after the administration of Lugol's solution. These observations of Plummer would seem to offer additional proof that in the hyperthyroidism of Graves's disease we have a picture that is essentially different from the hyperthyroidism of adenomata and that the mechanism of the intoxication is also different.

In adenoma there is a tumor growing in the thyroid substance. Accordingly we have a pathological gland with or without hyperthyroidism. In regard to the hyperthyroidism of adenomatous goitre there are two ideas present, one that the adenomatous cells elaborate and deliver an excess of thyroxin; the second idea is that the adenoma in some peculiar way stimulates the surrounding thyroid tissue to hyperfunction. The evidence would seem to support the idea that it is the adenomatous cells themselves which hyperfunctionate. There can be no doubt that the adenomatous tissue by and of itself can elaborate thyroxin and store up colloid and iodine.

The embryonal cells of the adenomatous goitre are stimulated into growth by a variety of unknown factors and for a long period of time the newly created adenomatous tissue cannot properly function. It can, however, store colloid and iodine long before it is in a position to elaborate thyroxin. The essential differences in the clinical manifestations of the adenomatous goitre and the exophthalmic goitre are, first, that the adenomatous goitre is first noted as a thyroidal enlargement from five to ten years earlier in life than the exophthalmic; secondly, the average duration of symptoms in the exophthalmic goitre is nine months, whereas in adenoma it is seventeen and a half years; thirdly, exophthalmos occurs within three months after the appearance of hyperthyroidism in an average of fifty per cent. of cases of exophthalmic goitre and within two years in eighty-seven per cent. of cases of exophthalmic goitre and is only present in about three per cent. of toxic adenoma (2); fourthly, the average interval between the time the adenomatous goitre was first noted and the onset of symptoms of hyperthyroidism is seventeen and a half years (Plummer). The hyperthyroidism of adenoma is characterized by an insidiousness, by an erratic course over a long period of years, of low intensity; finally, after a period of an average of seventeen years the adenomatous goitre is frankly expressed in conditions of clinical hyperthyroidism.

The characteristic and outstanding feature of hyperthyroidism of Graves's disease is the fact that its complete elaboration takes place within a relatively short space of time and it is the rule that when the case is first seen the clinical picture is usually complete and the outstanding features of the disease are already present.

The very definiteness of the clinical course in hyperthyroidism due to Graves's disease is one of its consistent and outstanding features. This course may theoretically be divided, however, into four stages: 1, the stage of development in which the basal metabolic rate is usually higher than the symptoms would seem to indicate; 2, the stage of increasing intensity in which the basal metabolism parallels the symptomatology; 3, a period of retrogression in which the basal metabolic rate falls to the normal more rapidly than do the symptoms; and finally, 4, the stage of remission in which the basal metabolic rate is somewhere near the normal base line although the symptoms of hyperthyroidism may persist as the result of chronic degenerative changes in the cardiovascular apparatus, in the sympathetic system, in the autonomic muscular system, etc. (Else).

In the hyperthyroidism of adenoma surgical procedure is directed to removal of the tumor. In the hyperthyroidism of exophthalmic goitre, however, the procedure is planned to diminish the actual amount of thyroid tissue by the removal of varying amounts of diffuse hypertrophied, hyperplastic tissue. Ligation in adenoma is of no value. Ligation in exophthalmic goitre is one of the procedures to diminish thyroid activity. Removal of the adenoma is sufficient to cure that type of hyperthyroidism whereas on the other hand the hyperthyroidism of Graves's disease requires the resection of the greater portion of both lobes and isthmus to reduce the activity of the thyroid within normal limits.

Finally, there is a group of patients who have suffered continuously for many years from hyperthyroidism. They represent what Crotti calls a "burnt out thyroid." Landstrom, quoted by Ochsner, has shown that in all cases in which hyperthyroidism resulted in an actual dilatation of the heart the organ never returned to normal even after thyroidectomy had brought the pulse back to a fairly normal rate. These patients have an irreparable damage to their nonstriated muscle fibres, they have the brown degeneration of the cardiac muscles with varying degrees of myocarditis. They have various types and stages of nephritis: their cerebral tissues are physiologically unstable and they are essentially chronic invalids irrespective of what is done for

them either medically or surgically. They are incurable, so far as the permanent degenerative lesions that the hyperthyroidism has produced, are concerned. We have seen a number of patients who exhibited hyperthyroidism for ten or fifteen years and when they came to us their thyroid condition was quite secondary to the degenerative processes that are exhibited in all the higher forms of body tissue.

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The Real Value of the Basal Metabolic Rate

With an Analysis of 470 Case Reports

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Because of unfortunate early experience with the basal metabolic unit many physicians were prejudiced against its use and blindly refused to recognize its value. The reasons for their attitude are legion. The two outstanding causes for the antagonism which the metabolic machine gained for itself are now quite apparently traceable to no fault on the part of the machine but to incompetence on the part of the technician and inadequate knowledge of the significance of the basal metabolic rate in relation to diseases of the thyroid on the part of the physician.

The inability of many physicians to interpret the basal metabolic rates in the light of the clinical findings and the grave errors they made in differential diagnosis resulted in the natural animosity of certain leaders of the profession. They looked askance at patients with colloid goitres who had been advised to submit to operation because an inaccurate test showed a rate of plus twenty-five. They had reason to become alarmed on listening to the queries of men who wondered why a patient with a rate of plus fifty had not done well following operation. C. H. Mayo has again and again emphasized that regardless of the basal metabolic rate, a patient who is on the verge of a crisis may be operated on only with the gravest risk. A basal metabolic rate of plus fifty in a patient about to go into a crisis gives much more cause for concern than one who has a rate of plus seventy but has passed through a crisis and is improving clinically.

In 1920 a Tissot unit was installed in this clinic with the kind assistance of Boothby and Sandiford of the Mayo clinic. The 470 patients who have since been referred to this department for basal metabolic rate readings form the basis for the analysis presented in this paper.

THE BASAL METABOLIC RATE IN EXOPHTHALMIC GOITRE

Differential diagnosis.—The basal metabolic rate is of inestimable value in the differential diagnosis of mild, incipient cases of exophthalmic goitre from those of cardiac neurosis, chronic nervous exhaustion, neurasthenia, and the nervous phenomena accompanying the menopause. While the majority of cases may easily be recognized by the clinical signs and history, some offer most difficult diagnostic problems even to specialists in the study of thyroid diseases. For example, in girls a symmetrical enlargement of the gland seen at puberty is accompanied by nervous symptoms, tachycardia and palpitation, and in a small percentage of these cases, the socalled vascular type, thrills and bruits are present. A normal metabolic rate assures the clinician that he is dealing with a vascular colloid goitre. To be assured beyond doubt that a patient does not have hyperthyroidism is a source of gratification to the patient as well as the physician.

TABLE I

STUDY OF THE BASAL METABOLIC RATE IN 470 PATIENTS.

	Number of Patients	Average Basal Metabolic Rate
Exophthalmic goitre	56	+54
Adenoma with hyperthyroidism	60	+38
Adenoma without hyperthyroidism	78	+ 6
Colloid goitre	47	+ 2
Malignant thyroid	3	+12
Myxedema	2	—24
Hypothyroidism	15	—15
Obesity	12	— 2
Neurasthenia	12	+ 8
Chronic nervous exhaustion	24	+ 7
Normal	31	+ 5
Cardiac neurosis	30	+10
Hypopituitarism	10	—11
Pellagra	1	+ 9
Addison's disease	2	— 6
Pernicious anemia	7	+ 2
Diabetes	12	— 6
Pregnancy	8	+ 8
Miscellaneous	60	+ 5

TABLE II.

THE BASAL METABOLIC RATE IN EXOPHTHALMIC GOITRE

Average preoperative rate	+54
Maximum rate	+92
Minimum rate	+25
Rate after one ligation	+39
Rate after two ligations	+33
Rate after thyroidectomy	+ 6

Index of hyperthyroidism.—While the rate may follow the progress of the disease in general and register the degree of thyroid activity, it is not an index of the patient's ability to withstand operation. For example, although one patient in this series of cases had a basal metabolic rate of only plus forty-four, he was considered a far greater risk for operation than another whose rate was plus ninety-two. The risk in the first case was greater because hyperthyroidism had existed for only three months; there had been recent rapid loss in weight and strength; the patient was beginning to suffer from gastrointestinal disturbances and was on the verge of a crisis. Even a hot water injection was attempted with risk. On the other hand, the patient with a basal metabolic rate of plus ninety-two had passed through a crisis and enjoyed a period of

Fig. 1

Fig. 2

Fig. 3

Fig. 1.—Patient with myxedema following operation for recurrent exophthalmic goitre in 1922. Six months later severe ostemyelitis developed with multiple bone involvement and subsequent thyroiditis of the remainder of the gland. The basal metabolic rate was minus twenty-six per cent.; following treatment with thyroxin the rate rose to normal with great clinical improvement.

Fig. 2.—Same patient as in Fig. 1. Two months following operation the basal metabolic rate was plus five per cent. and the patient had gained thirty pounds.

Fig. 3.—Patient with exophthalmic goitre and a basal metabolic rate of plus sixty-four per cent. Ligations and thyroidectomy were performed under local anesthesia with an uneventful recovery.

comparative remission of symptoms. Ligation was performed with only a mild reaction. In the majority of patients with only slight loss in weight and strength, ligations are seldom indicated when the basal metabolic rate is below plus fifty, while primary thyroidectomy should seldom be performed in the presence of a rate higher than this.

Indication of the result of treatment.—During the past year wonderful progress has been made in the preoperative handling of these cases with Lugol's solution of iodine. It has been possible to decrease preoperatively the metabolic rate an average of twenty points in a series of thirty cases. This reduction in the rate is accompanied by a proportionate clinical improvement, the patients become more quiet and composed, and no longer thrash about the bed and chafe their extremities. The necessity for ligation is obviated in many cases. It will be noted in Table II that the basal metabolic rate dropped an average of fifteen points after one ligation and twenty-one points after two ligations.

Finally, it is a source of gratification to observe the steady downward slant of the metabolic curve after the different operative procedures until three weeks after thyroidectomy when the majority of rates have returned to normal. Occasionally, a few months after operation the patient makes some complaint and it is useful to know whether the thyroid is still overactive. A normal rate eliminates the possibility that the surgeon has failed to remove sufficient gland and indicates that the patient has simply overestimated his recuperative abilities or that some foci of infection, such as teeth and tonsils, have been overlooked. All my patients are required to report to me at frequent intervals for observation and advice; all foci are eliminated, and special attention is paid to refraction of the eyes.

Fig. 4

Fig. 5

Fig. 4.—Exophthalmic goitre in a boy aged nineteen years. On admission the basal metabolic rate was plus forty-four per cent., and he was rapidly losing weight.

Fig. 5.—Same patient as in Fig. 4, two months following double ligation and a three stage thyroidectomy. He gained twenty-six pounds and the basal metabolic rate is now plus eight per cent.

ADENOMA WITH HYPERTHYROIDISM

The average adenoma does not present symptoms of hyperthyroidism until the patient is forty-four years of age. Many cases of hyperthyroidism are induced in simple adenomas in young persons through the promiscuous use of iodine. Kocher, one of the first to recognize this

condition, called it *Jod Basedow,* and repeatedly warned against it. In such cases of induced hyperthyroidism it is well to determine the extent of the damage and also to make metabolic tests at frequent intervals to ascertain the progress of the hyperthyroidism. In twenty-five per cent. of the patients with toxic adenoma whom I observed during the past year a toxic condition had developed as a result of the administration of iodine. In the majority of instances iodine had been given in such quantities and over such long periods of time that thyroidectomy was necessitated. In a few cases the patients gradually recovered through nonoperative measures.

The attention of the propaganda department of the American Medical Association was called to a certain quack remedy, sixteen bottles of which would cure any goitre. This remedy, which has induced hyperthyroidism in hundreds of patients in the middle and far West, was analyzed and found to contain potassium iodide. The remedy was exposed in the *Journal of the American Medical Association* but it has not been entirely suppressed and is still taking a heavy toll from its victims.

COLLOID GOITRE

In colloid goitre the basal metabolic rate is chiefly of value in following the course of medical treatment with iodine, thyroid extract, or thyroxin, and determining the patient's tolerance for these substances. Certain patients will tolerate thyroid extract better than iodine and will show much greater improvement with one than the other. At present I am treating nearly four hundred children between the ages of ten and twenty with the various preparations. The majority are receiving iodine in the form of iodostarine, after the method advocated by Marine and Kimball. Certain of these cases are selected for controls and the basal metabolic rates are frequently determined. By pushing medication in many of these children and yet keeping the rate between plus five and plus fifteen, it has been possible either to reduce many of the colloid enlargements to a very great extent or cause them to disappear altogether.

MYXEDEMA AND HYPOTHYROIDISM

The metabolic rate is of great value in cases of hypothyroidism, first of all in determining or confirming the diagnosis, and second as an indication of treatment. The diagnosis in these cases is frequently overlooked by the best of clinicians and treatment for chronic nephritis or anemia is continued for long periods without result. A basal metabolic rate of minus fifteen or more at once settles a suspected diagnosis.

The aim of the treatment is accomplished by bringing the metabolic rate to normal through the intravenous use of thyroxin, or by the administration of thyroid extract by mouth. The rate may then be maintained within normal limits by the correct daily dose.

DISEASES OTHER THAN THOSE OF THE THYROID GLAND

In conditions or diseases other than those of the thyroid gland the basal metabolic rate has not as yet proved to be of consistent aid either in diagnosis or treatment. The rates reported in cases of tuberculosis of the thyroid gland have been consistently high. In malignancy of the thyroid our own rates as well as others reported have been variable. A variable rate is also the rule in diseases of the other internal glands of secretion as well as in diseases such as pernicious anemia, pellagra, epilepsy, diabetes, arthritis and Hodgkin's disease.

SUMMARY

The basal metabolic rate, when accurately determined, is of great value in the diagnosis and treatment of the various diseases of the thyroid gland. The rate is not an index of the patient's ability to withstand operation, but it is a valuable aid when interpreted in the light of the clinical factors. The greatest value of the metabolic rate in diseases other than those of the thyroid lies in eliminating the possibility of overactivity on the part of the gland.

Sidelights on Diabetes

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While much valuable data, both scientific and clinical, have been accumulated within the past two years, it must be evident to the critical student that the end is not yet, that there are still important factors to be considered which should go along with the present information regarding the treatment of diabetes. This statement is warranted by the following memoranda (1) extracted from the report of the Insulin Committee of the University of Toronto, as follows: "In diabetes there is a decreased production of insulin, due to the weakened function of the islands of Langerhans. . . . The etiological factor or factors causing this damage to the pancreas have not been discovered. It is known, however, that diets containing excessive quantities of carbohydrates, or proteins, fats and carbohydrates in improper proportions or quantities, as well as infections, further weaken the function of the already damaged pancreas." It is stated "The artificial administration of insulin restores to the body a normal metabolism of carbohydrates, fats and proteins," but, "Although the administration of insulin is capable of relieving cardinal symptoms and signs of diabetes mellitus, *one must not conclude that insulin can replace the dietetic treatment of the disease.*" Still another quotation should be added, because the item will prove of vast importance to present as well as to future investigators—"In some cases the pancreas has so regained its power to produce insulin that the daily dose need not be increased."

The significance of the foregoing items will be apparent when the claim is put forward that as a result of a deficiency in the diet, the function of the delicate structures of the pancreas has been arrested or destroyed—but how? The correct answer to this important question must be determined by means of chemistry and electricity. This assertion is warranted by the data which appear in an article (2) by Francis C. Grant, of Philadelphia, which gives in detail an account of the use of an electrical apparatus by which "the presence of a subcortical growth was determined by passing the needle into the brain substance and noting the sudden drop in resistance when the tumor was encountered." In describing the operation he says: "At the operating table we have used the apparatus in twelve cases. Of these, five were gliomas. In every case, the resistance of the tumor was only half that of the normal brain. . . . Experiments with a view to determine the electrical resistance of the normal brain and different areas of the same brain were made in a series of ten dogs, the resistance in all of them being approximately the same. In a series of forty formaldehyde hardened brains containing proved gliomatus tumors, the gliomatous tissue consistently produced a resistance from a half to two thirds less than that of the adjacent normal tissue. Formaldehyde hardened tissue gives a much higher resistance than living brain tissues, and the resistance of the preserved normal tissues varies from specimen to specimen; but in every instance the gliomatous tissue is strikingly less resistant to the current."

Now, my impression is that the effect on the pancreatic function is due to magnesium infiltration affecting the islets of Langerhans and as magnesium is a poor conductor of electricity, it naturally follows that a diabetic pancreas examined with this apparatus would show greater resistance than normal. And if this deduction is found correct by the electrical test, it would be a simple matter for the physiological chemist to determine whether or not the diseased pancreas contained a surplus of magnesium as compared with the normal pancreas. It seems to me that these tests would be far more satisfactory and more conducive to progress in medical science than the assumption of Allen that diabetes is due to "functional overstrain."

This suggestion has already been proved, from a clinical point of view, rather indirectly it is true, but it goes to confirm the latest information regarding the function of the parathyroids in the metabolism of calcium. Forrest (3) of Newcastle-on-Tyne reports a series of five clinical cases in which parathyroid extract was given by mouth, in conjunction with insulin, and the blood sugar curve compared with that following the administration of insulin alone. By means of this combination medication there was a marked reduction and Forrest concludes, "From the cases mentioned above it is evident that parathyroid extract exerts definite action on the blood sugar curve after exhibition of insulin. Whether this will be of any importance as regards treatment is not yet clear. Parathyroid alone does not appear to have any action on the blood sugar; such changes as have been noticed could be explained as the result of starvation. Investigations are in progress to ascertain the therapeutic value of the combination."

In this connection it should be recalled that parathyroid is supposed to exert a distinct and demonstrable action in the treatment of socalled uremic poisoning, a fact to which I called attention in a previous article (4). Rogers (5), a British Medical Officer, India Service, published a clinical record of one thousand cases of uremic poisoning in the algid state of cholera. Upon adding four grains of calcium chloride to the pint of physiological salt solution for transfusion, the mortality was reduced seventy per cent. By way of explanation I added the following: "There are two types of uremic poisoning, one with profound depression, in which the output of ammonia is largely increased, but there are no convulsions; in the other the excretion of ammonia is retarded, convulsions being the dominant feature. In all cases, however, the calcium content of the blood is deficient. . . . "Laboratory investigations come to our aid by demonstrating that an enzyme produced by the thyroid gland is responsible for converting ammonia from the systemic nitrogen, that another enzyme from the suprarenal cortex acts upon ammonia, changing it into a poisonous substance, and finally, a parathyroid ferment (hormone?) converts this toxic principle into the harmless urea. That is to say, the poison of uremia is an intermediate product between ammonia and urea and results from glandular deficiency."

By way of explanation may I be permitted to quote further (*loc cit.*). "Both calcium and magnesium are proximate principles and possess several important properties in common—they are antacid, catalytic and reconstructive. Whatever may be the chemical status in the course of distribution, we note that ultimately they become colloidal and that this is their intracellular condition. As colloids they acquire increased surface energy and enact the rôle of ferments—mineral ferments, but here the analogy ceases. . . . When the central nervous system or any part of its mechanism, the muscles, the bone structure or the glandular appendages, including the ductless glands, are robbed of their essential chemical constituents, their normal function is arrested or destroyed. . . ."

Another interesting item connected with the study of diabetes mellitus should not be overlooked—I refer to the possibiliity, or rather, the probability that other tissues besides the pancreas may be involved. For example, an eight line paragraph appeared recently (5) referring to the publication (6) of W. L. Brown: "While the discovery of insulin completely proves that the cell islets of the pancreas form an internal secretion which promotes the assimilation of sugar, it does not prove that all diabetes is due to a pancreatic lesion. The fact that pituitary extract can antagonize insulin provides new support for the view that diabetes may be due to a more profound and subtle disturbance of metabolism than a lesion of one gland." More direct is the announcement of Richards of the University of Pennsylvania. In the course of a lecture or informal talk at a recent meeting of the Philadelphia County Medical Society, he was giving a detailed account of his experiments upon depancreatized dogs, with a view to determine, if possible, the special function of the tubules as well as the glomeruli in the output of sugar. Incidentally, he stated that an examination of the urine as it was

discharged from the pelvis of the kidney showed a considerable amount of sugar, but when it reached the bladder the sugar had disappeared, showing that it is the function of the ureteral membrane to take up sugar (imbibition), and my impression is that many cases of socalled diabetes which respond so readily to calcium medication are cases of this special character. The ureteral membrane has become charged with magnesium in excess, owing to the constant action of the acid urine, which eliminates the calcium, so that this tissue shows that magnesium interferes with the permeability of the organized structures. In other words, the normal nucleoproteins are transformed by the presence of soluble magnesium salts into magnesium nucleoproteins, which lack the property of imbibition—and this accounts for the improvement in mild cases of diabetes from dietetic treatment alone, as well as for the decidedly beneficial effects of parathyroid medication in conjunction with insulin.

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Physiological and Anatomical Considerations of the Ductless Glands*

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One should have a comprehensive knowledge of the physiology of the ductless glands and its anatomical basis, in order to understand the great number of clinical syndromes that present themselves from various endocrine disorders, and be able to interpret them. Pluriglandular disorders predominate, but symptoms of one gland may make up the whole background of the illness. Thus you may be dealing with a uniglandular type, i. e., thyroid, pituitary, adrenal, thymus, pineal, gonadal and others, with such symptoms predominating associated with compensatory hyperfunction or hypofunction of other ductless glands. Every clinical case needs individual study.

THYROID GLAND

It is a ductless compound alveolar gland, extremely vascular and situated at the front and sides of the neck extending upwards upon each side of the pharynx. It is relatively larger in children and females, and consists of two lobes and an isthmus, occasionally we find a middle lobe. We frequently find accessory thyroids with the x ray. At birth most of the alveoli are empty, but soon become more or less filled with colloid substance. There are two sets of cells; secreting cells and resting or reserve cells (nonsecreting). Gley showed that while removal of the thyroid alone does not necessarily cause death, it was the removal of the parathyroids which caused the nervous phenomena and the fatal ending. That the organ is a secreting one is known by the fact that it can be transplanted to other parts of the body. There are convincing data indicating an intimate relationship between thyroid and parathyroid, anatomically, physiologically and pathologically. There is also an important connection between the thyroid and adrenals, the former and mineral, protein and fat metabolism. It increases nitrogen excretion and other tissue wastes.

The thyroid parathyroid secretions therapeutically increase the sensitiveness of the phosphorus of all cells, especially the nuclei, to the oxidizing action and enhance not only nutritive and metabolic processes but augment the autoprotective and immunizing power of the blood, greatly increasing the opsonic index. It also stimulates the hemopoietic organs. The great influence of the thyroid gland on oxidation enhances all vital processes and mental and physical development. Intelligence and the cerebrospinal system are partially influenced owing to its wealth of phosphorus. All organs being the seat of increased metabolic activity and nutrition, the intestinal, renal, cardiac, cutaneous and hepatic functions are all enhanced. Even the hair grows bountifully when thyroid is given when the defect is due to impaired thyroid nutrition. It counteracts premature senility and keeps up the tone of the muscles. The phenomena evoked by the pituitary body and the thyroid show considerable parallelism. Nucleoproteid is found in the thyroid. Dr. Kendall isolated a crystalline substance called thyroxin from the thyroid which contains sixty per cent. iodine.

PARATHYROID GLANDS

These are small ductless glands usually four in number, the size of orange seeds, that lie upon the posterior surface of the lateral lobes of the thyroid. They are constant in man and more distinct in infants than in adults. The cells are of two types: 1, resting or clear cells which are numerous; and 2, granular or oxyphilic cells, that are larger, granular and take strong eosin stain. Some lobules have a distinctively alveolar structure and contain colloid in its lumen.

The parathyroid secretion serves to neutralize the toxic wastes which give rise to tetany. It also plays an important part in calcium metabolism. It is considered that tetany is an intoxication from guanidine compounds which is destroyed by parathyroid secretion and also made inert when precipitated by the calcium. With thyroid it increases tissue resistance, increases the number of leucocytes and the opsonic index. It influences bone growth, dentition and general nutrition. Dr. Vines uses parathyroid with

*This article is a summary. The full text will appear in the reprints.

success in varicose veins, due to improved calcium metabolism.

PITUITARY BODY

The pituitary gland is a pinkish gray vascular mass thoroughly protected by nature, centrally located on the base of the skull, surrounded by the sella turcica bony encasement within the diaphragma sella which is pierced by the infundibulum. It consists of the anterior or glandular portion which is larger, and, the posterior or nervous part. There is also a pars intermedia and Dr. Tilney described the pars tuberalis, both of which seem to be a part of the anterior lobe, but structurally are different. The secretion derived from the posterior lobe is considered by many to find its source in the pars media. It causes a marked rise of blood pressure; increased flow of urine due to increased kidney concentration; increases the secretion of milk; heart rate slowed and blood pressure raised; mineral metabolism and calcium excretion are influenced; all involuntary muscle especially the uterus is stimulated and its tonicity improved by direct action upon the muscles, and, carbohydrate metabolism is influenced by accelerating glycogenolysis in the liver. It also influences general metabolism and improves appetite. It is also said to increase the quantity of cerebrospinal fluid.

Anterior lobe secretion stimulates bone growth and connective tissue generally. With thymus and adrenal cortex it has a regulating influence upon the normal development of the reproductive glands. Feit has shown the close relationship of syphilis to hypophyseal involvement. It also influences calcium retention and mineral metabolism. Through the fat tissue utilization power it exerts, it spares protein. By virtue of this it is useful in skin conditions as scleroderma, seborrhea, acne, gouty concretions and persistent urticaria. Because of its part in calcium metabolism it has a favorable influence on dentition, prevents decay, favors orthodontia growth or correct occlusion. It also stimulates sympathetic and mental impulses. Pituitary extract diminishes the pulmonary blood pressure and, together with adrenalin which relaxes the bronchial musculature, has a favorable influence in bronchial asthma.

Burnier in 1912, described a type of cases showing optic atrophy, adiposity, atrophy of the external and internal genitals and dwarfism. It is a combination of posterior and to a smaller extent anterior pituitary insufficiency. Froehlich described cases of posterior pituitary insufficiency and thyroid insufficiency. Cushing described cases showing hyperpituitary secretion at one time and hyposecretion at another and also cases showing hypersecretion of the anterior lobe and hyposecretion of the posterior lobe at the same time.

THE ADRENAL ORGANS

This gland is situated on the upper and anterior surface of the kidney. It is surrounded by a capsule and consists of a cortex or outer zone and medulla or central portion. The cortex and medulla are sharply differentiated both in general appearance and in histological structure. The cortex cells contain lipoid granules whereas the medulla is vascular and contain granules known as chromaffin. Physiologically we may divide the suprarenal glands into two great systems, i. e., the cortex or interrenal system and the medulla or chromaffin system. The latter is a part of the large chromaffin system which tissue is spread over various parts of the body.

The suprarenal cortex seems to have a peculiar influence over the functions of the gonads and it is intimately connected with the development of secondary sex characteristics. It influences directly and indirectly somatic and psychic development. The cortical lipoids have been found capable of fixing and neutralizing toxins. It forms a depot for cholesterol which is one of the most important substances in the defence of the body against infection. It has also a tonic effect upon heart muscle. Subsidiary interrenal rests are found in other parts of the body also. Hyperfunction or overabundance of cortical tissue gives rise to pseudohermaphrodism, premature puberty, suprarenal hirsuties and virilism in later life.

The medulla secretes adrenalin, adrenin or epinephrin. Normally these hormones seem to be the regulators of the body emotions stimulating the autonomic, parasympathetic or vagotonic system which is antagonistic to the sympathetic. Thus we get a slowing of the heart beat and a more vigorous and rapid contraction of the heart from adrenalin. It raises blood pressure through its contractile influance over the arterioles. It dilates the pupils. The inhibitory fibres of the intestinal walls or splanchnic fibres are stimulated and hence we get relaxation. This together with pituitrin seems to control gastroenteric muscular action. It improves the general tone of the body because of its regulating influence upon the autonomic system. It has also an influence upon the sugar regulating mechanism and indirectly upon sugar metabolism. In the blood it gives rise to leucocytosis, first increasing the lymphocytes and later the polynuclear neutrophiles. It has also oxygen combining powers with the albuminous material in the hemoglobin and blood plasma. This adds to its antitoxic and body defence properties. As a calcium absorber it is helpful with parathyroid in tetany and enters as a factor in normal dentition. It also stimulates the liver to an abnormal production of catalase. It is used hypodermically injecting 0.5 c. c. of 1:1,000 sol., to determine early hyperthyroidism (Goetsch). In beginning chloroform narcosis there is a rapid stimulation of the chromaffin system which is quickly followed by exhaustion and diminished adrenalin secretion and often collapse. This suggests the administration of adrenalin before giving chloroform inhalation. Cases of postinfluenzal psychosis were improved with adrenalin. Hyposecretion of adrenalin is known to give rise to hyperchlorhydria and predisposes to gastric ulcer. It has also been observed that overactivity of the vagus ofttimes stimulates the adrenal medulla to hypersecretion which in turn balances the vagus irregularity. This secretion is vital to the life of the organism especially because of its action upon the cardiovascular and autonomic systems. An overdose may cause death through diminished lung expansion, excessive congestion and consequent pulmonary edema and not bronchial constriction. Its exhaustion gives rise to marked asthenia.

PINEAL GLAND

This small reddish gray body is placed immediately above and behind the posterior commissure and between the anterior corpora quadrigemina on which it rests. It reaches its greatest development

about the seventh year and after puberty it undergoes involution until it becomes a fibrous band. Its follicles contain a viscid fluid and sabulous matter called bran sand. Physiologically its secretion lowers blood pressure, restrains overfunction and development of the genitals and influences growth and muscular tone in the young child.

THYMUS

It is an organ of fetal and extrauterine life, reaching in man its greatest development at the end of the second year. After this age it undergoes a slow retrograde change until in the twentieth year scarcely a vestige of glandular tissue remains. Formerly it was thought that the gland reaches its maximum size at birth and afterwards undergoes atrophy, so that it is entirely absent in adult life. More careful investigations show that the gland retains its size and presumably its full activity until the period of puberty. It then undergoes a gradual atrophy but some remnants of the gland tissue remain throughout life.

The physiology of the thymus is rather obscure. It is in some way concerned with the processes of growth and in early life influences body metabolism. Similar to pineal gland it restrains sexual function and development to excess. There is some sort of reciprocal relation between the thymus and the reproductive glands. The removal of the thymus in young dogs retards bone growth and induces a condition similar to rickets. It is concerned in the synthesis of nucleic acid and phosphorus metabolism. Because of this the thymus is helpful in cases of malnutrition, rickets, marasmus, osteomalacia, other osseous disorders and mental development.

GONADS

The organs of reproduction have a remarkable influence upon general metabolism and tissue oxidation; regulating muscular tone; stimulating the spinal centres and central nervous system; improving mental and physical vigor. The Leydig cells are functionally united with the sperm cells and undergo considerable development prior to spermatogenesis. Puberty is an endocrine event in which the secretions of the genital glands, the hypophysis, thyroid and the suprarenals take part as excitants of the sexual development, while the thymus and pineal glands act as inhibitors. The harmonious action and interaction of the endocrine system determines the successful pubertal development. The gonads have a specific influence upon sexual characteristics and sexual appetite. It influences catabolism of fat; hair growth and distribution; development of the bones by virtue of influencing calcium excretion and mineral metabolism; the larynx and character of the voice; mentality and assimilation of carbohydrates. The prostatic extracts seem to cause contractility and muscular tonicity of the vas deferens and seminal vesicles.

Ovarian secretion favors oxidation of phosphorized organic substances, hydrocarbons and fats and increases the hemoglobin content of the blood. It also stimulates diuresis, excretion of urea, phosphorus and calcium salts, blood pressure is raised, heart action and respiration are slowed.

The corpora lutea are formed after the discharge of the ovum in the Graafian follicles, the lining of which forms folds and becomes permeated with blood channels. When pregnancy occurs, the epithelium of the Graafian follicle proliferates, its cells increase in size and become filled with yellowish granules—the corpora lutea. Lutein seems to influence mammary development and menstrual disorders. It is useful in excessive or irregular flow. When one frequently aborts, lutein will help considerably to continue the pregnancy to term by restraining pituitary and ovarian influence over the uterine muscle and ovum fixation and hence permitting the ovum to remain fixed and the uterine muscle quiescent.

PARAGANGLIA GLANDS

Under this head are grouped certain small ductless glands and small groups of cells which are closely associated both anatomically and embryologically with the sympathetic system. Their secretions are similar to adrenal medulla and actually a part of the chromaffin system. These are the carotid; coccygeal body or Luschka's gland; tympanic gland and the parasympathetic organ of Zuckerkandl. There are other organs I may call ductless gland appendages which have also an internal secretion as the liver, in glycogenic function; pancreas in sugar metabolism; the spleen as a hemopoietic organ and lymph glands assisting the thymus.

METABOLIC PHASE

Metabolism involves all those changes that occur in our foodstuffs from the time they are absorbed from the alimentary tract until they are eliminated from the organism. In many of these processes the oxygen absorbed from the lungs plays an important rôle. Sajous has shown that the adrenal medulla and thyroid are active in this process of taking up this oxygen and distributing it to the various tissues of the body through the intermediary of the blood.

PROTEIN METABOLISM

Thyroid extract increases nitrogen output and helps materially protein metabolism. Posterior pituitary lobe, increases tissue fat utilization power and thereby is protein sparing and also influences protein metabolism. Adrenalin, by stimulating the former two, indirectly influences protein metabolism. The process of deaminization of the excess of aminobodies is accomplished by the liver as by the body itself.

FAT METABOLISM

The essential nutritive value of the fats is that they furnish energy to the body and, from a chemical viewpoint, they must contain more available energy than the protein or the carbohydrates. The pituitary, thyroid, gonads, pineal, thymus and adrenals influence fat metabolism and regulate its distribution over the body.

CARBOHYDRATE METABOLISM

The available carbohydrate material of the body consists of the glycogen found in the tissues, especially in the liver (one to four per cent.) and in the muscles 0.5 per cent. The sugar formed from this glycogen and present constantly in the blood is 0.1 per cent. to 0.15 per cent. During starvation the glycogen and sugar are obtained from proteins and fat of the body. The regulation of the sugar supply of the body is a matter of the greatest importance.

The ductless glands, as the evidence shows, are most concerned in these processes. On the one hand we have the subsequent reconversion of this glycogen to sugar (glycogenolysis) according to the needs of the body. On the other hand we have the processes of consumption of sugar in the tissues for energy purposes (glycolysis). These processes may be accelerated or retarded by the action of the hormones arising in the ductless glands. The pancreas and liver are greatly concerned in this mechanism. The thyroid, pituitary and the gonads influence it. The adrenals stimulate the processes.

THE INORGANIC SALTS

The body contains in its tissues and liquids a considerable amount of inorganic material. There can be no doubt, in fact, that each one of the salts of the body has a special nutritive value and a special metabolic history. Including the bones, the average amount of ash in the body is about 4.4 per cent. of its weight. The bones contain most of it, about five sixths in the adult and, less in a child, in which the proportion of animal matter is much greater. In muscles there is about 0.6 per cent. of its moist weight. The ash is made up of phosphates, chlorides, sulphates, carbonates, iodides, fluorides, and silicates of potassium, sodium, magnesium, iron and calcium. In the body fluids the main salts are sodium chloride, sodium carbonate, sodium phosphate and potassium chloride. They maintain a normal composition and osmotic pressure in the liquids and tissues of the body, and, by virtue of their osmotic pressure they play an important part in the composition of living matter. In childhood and adolescence all the calcium that can be obtained is required for growth. The metabolism of calcium appears to be regulated by the ductless glands acting together as a group. The calcium is found in the body in two forms: 1, Fixed in the tissues helping to build up the frame work of the body, and 2, floating calcium, ready to be called upon when required. Calcium also regulates muscular contraction and when in insufficient quantity, effusions of lymph into the tissues take place. The thyroid, parathyroid, adrenal medulla, anterior pituitary and thymus act as calcium absorbers or retention; whereas adrenal cortex, posterior pituitary and the gonads are calcium excretors.

TEETH

The function of the teeth in children is so important for the act of chewing and preparing the food bolus for deglutition, that proper digestion and normal metabolism of foods are entirely dependent upon it. And indirectly body and mental growth is dependent upon it and so healthy teeth are essential. When the correct balance between intake and output of calcium salts is upset as in some children, and the loss is great the enamel of the teeth will begin to break down, and the alkalinity of the saliva diminish. Then caries sets in with further destruction of enamel and dentin. This will be followed by the accumulation of food particles within, bacteria nests occur followed by fermentative action in the carbohydrate medium of food recesses, in which acid solvents are generated and more destruction and infection of the teeth. Early attention to improper functioning ductless glands may overcome these defects. It is therefore correct that the calcium content of the saliva and the blood can be increased by suitable pluriglandular therapy, and that this calcium can be laid down as fixed lime in the teeth.

The internal secretions have also a certain favorable influence upon the dental tissues proper, by bringing about normal eruption; cause sufficient calcification previous to eruption; increase calcification after eruption; concerned in the prevention of caries through the alkalinity of the saliva as already mentioned and arrest decay should caries supervene; and, possibly by means of a trophic action keep the tooth tissue in such a healthy state as to resist caries.

CONCLUSION

I wish to emphasize the fact that after offering a comprehensive survey of the anatomical and physiological considerations of the ductless glands to the reader, he should be in position to be able to differentiate endocrine disorders from other ailments. When applying this knowledge in a practical way to overcome physical or mental abnormalities therapeutically, it must be understood that the administration of ductless gland products should not be construed as the cureall for every disease. And as stated, neither is every complaint, pathological state, mental aberration and every functional and organic deviation from the normal an internal secretory disturbance. Climate, dietetics, vaccines, serums, drugs, lipoids, vitamines, massage, electrotherapy, hydrotherapy and calisthenics and other measures each have their own usefulness and often act synergistically with the ductless glands when indicated and employed together. A meagre knowledge of these fundamentals and the careless administration of endocrine therapy may make out of it a fad or belittle a rational form of therapy of the utmost value to the human economy or organism.

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The Thyroid Apparatus in Man.—G. Scott Williamson (*Lancet,* December 22, 1923) believes that the thyroid gland, the parathyroid bodies and the thymus are intimately related anatomically, physiologically and pathologically. They are probably engaged in the conduct of some specific function. The thyroid gland is the main organ. The parathyroid is a sentinel gland of neurolymphatic nature, set in the course of the effluent, probably engaged in measuring the efficiency of the thyroid gland, and through the sympathetic nervous system adjusting its operation to the needs of the body. The thymus is a reservoir for the effluent—which, according to its nature is stored either as fat or in the lymphocytes. This must not be taken to imply a movement of lymphocytes into the blood or lymph; the lymphocytes are probably manufactured and absorbed *in situ.* The fact that colloid usually disappears to give place to any secretory activity, and the fact that it need not be associated as in marasmus and in early fetal active glands, make it probable that the colloid is exercising some vehicular function analogous to some constituents of the bile. It is only passively concerned in the operation of the thyroid apparatus.

Certain preliminary chemical studies fix upon nitrogen carriage as the significant function of the lymphocyte, and this from the point of view not so much of total nitrogen as of the nature of nitrogen.

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The Surgical Treatment of Hemorrhage from Gastric and Duodenal Ulcers*

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CLASSIFICATION OF HEMORRHAGES

The surgical treatment of hemorrhage from gastric or duodenal ulcers may be discussed in reference to two distinct groups of cases, the sudden acute hemorrhages, so severe as to threaten life itself, and the chronic or recurrent hemorrhages, less alarming in extent but by their repetition tending to produce a serious and profound anemia, which, if unchecked, may ultimately prove fatal.

From a surgical point of view this classification seems preferable to that in which a distinction is drawn between hemorrhage from a socalled acute ulcer and hemorrhage from a chronic ulcer, and this for two reasons. First, we do not know that there is such a pathological distinction, the existence of an acute ulcer is purely conjecture, and secondly, if such distinction there be we cannot recognize it clinically. The duration of symptoms has no relation to the chronicity of an ulcer as seen in the operation theatre.

ACUTE HEMATEMESIS

I am well aware of the danger of laying down hard and fast rules. To do so may give those who come after us cause "to reflect on the vanity of received opinion"—nevertheless I have formed very decided views as to the wisdom of surgical intervention in cases of acute hematemesis, which I may express in a single sentence. The subject for discussion is the surgical treatment of acute hematesis. There should be no such thing. Operation during the progress of or shortly after a gastric or duodenal hemorrhage is a delusion and a snare, and in my judgment should never be attempted.

Acute hematemesis is one of the unappropriated blessings still remaining for the physician. It is not a condition which lends itself to operative measures. The collapse induced by loss of blood is favorable for the arrest of hemorrhage but unfavorable for surgical intervention. Usually, it can be arrested by medical treatment, and if this fail, surgical interference is not likely to help matters. By subjecting such patients to operation, we expose them to added dangers, which may just turn the scale against them, whereas without operation the probability is that they will recover. I shall endeavor very briefly to give reasons for the faith which is in me.

In discussing this subject two questions must be answered. 1. What is the mortality rate from hemorrhage in cases treated medically? 2. What is the mortality rate in the cases treated by immediate operation?

MORTALITY RATE FROM HEMORRHAGE IN CASES TREATED MEDICALLY

Most clinicians are agreed that the mortality rate from hemorrhage in cases of gastric and duodenal ulcer treated medically is under five per cent. In the four series of cases given in Table I the mortality rate is 3.8 per cent.

TABLE I.

Recorder	No. of Cases	Mortality Rate
Lenhartz	201	3 per cent.
Ewald	166	4.8 " "
Wirsberg	320	5.9 " "
H. P. Hawkins	556	0.7 " "
	1243	3.8 " "

MORTALITY RATE FROM HEMORRHAGE IN CASES TREATED BY IMMEDIATE OPERATION

The last published statistics I can find are those of Lindberg (1). He tabulates eighty-three cases with thirty deaths, a mortality rate of thirty-six per cent. If I relied on these statistics doubtless the objection would be raised that they are out of date, and that with more modern technic and especially by the use of blood transfusion, the results of operation are far better, at the present time. I am not clear that there is ground for this optimism, but at any rate the results of surgical treatment are still indubitably inferior to the results of medical treatment. Through the courtesy of the surgical registrars of the London hospitals I have ob ained some statistics as to operation for acute hematemesis in recent years and they are shown in Table II. I should like to take the opportunity of thanking most sincerely those who have helped me.

*Being an Introduction to a joint discussion in the Sections of Medicine and Surgery of the Royal Society of Medicine, March 5, 1924.

Obviously it is not fair to compare these figures with the mortality rate from hemorrhage in all cases of ulcer whether they bleed or not. They must be compared with the mortality rate in severe cases of hematemesis. Hemorrhage occurs in at least two thirds of all cases of gastric ulcer, and is severe or recurrent in about thirty per cent. Calculated on this basis the mortality rate of those cases in which there is severe or recurring hemorrhage treated medically would be about eleven per cent. I think this is probably an exaggeration but we shall be well within the mark in stating that of the patients who bleed severely or bleed repeatedly and are treated medically not more than one in nine will die, while of those who are operated on one out of three will probably die.

SOURCE OF BLEEDING

No doubt there are surgeons who by superior skill, aided by a considerable share of luck, may be able to show much better individual results than these. I say aided by luck, for we must bear in mind it is impossible in a given case to predict whether we shall be able to find, let alone deal with, the source of the bleeding. It is inevitable that in a certain proportion of cases the patient will have the added risks of an operation without any effective treatment of the bleeding point. In at least three of the successful cases in Table II no definite source of bleeding was discovered and nothing further could be done. The operation was purely exploratory and therefore an unnecessary complication to the patient's recovery.

TABLE II.

No. of Cases	Deaths	Mortality Rate
19	7	36.8 per cent.

I think this is what we should expect, as I am convinced that bleeding from the ulcer itself is far less common than is imagined. In duodenal ulcer especially the source of the bleeding is a general oozing from the mucous membrane of the stomach—the whole surface appears to be weeping blood—and I have in some cases cut sections of the mucous membrane which showed the blood cells escaping between the epithelial cells of the mucosa.

MEDICAL TREATMENT SAFER THAN SURGICAL

But apart altogether from statistics, I am convinced from my own experience that the treatment of acute hematemesis by medical means is the wiser and safer course. Up to the end of the year 1922 I have had under my care, or jointly with my colleague, Dr. Soltau Fenwick, forty cases in which hematemesis was of such severity that the patients were on the brink of the grave. All of them recovered with medical treatment, indeed I have yet to see a death from hematemesis from a gastric or duodenal ulcer. In all of them operation was delayed for two or three months until the patient had recovered from the effects of the hemorrhage, for I confess I have never yet operated during the course of a hematemesis. These cases are tabulated in Table III.

All the patients were treated medically in the first instance and in all but two gastrojejunostomy was performed at a later date. Of the two exceptions one was a nurse who was anxious to avoid an operation. She was kept in bed for six months and eventually made a complete recovery and had no further hemorrhage. The other case was one of gastrojejunal ulcer in which the ulcer was excised and a new anastomosis performed. Four of the cases are labelled gastrostaxis, as at the operation I could find no ulcer, and I think that the hemorrhage was probably secondary to a diseased appendix. These were among my very early cases and I admit that the performance of gastrojejunostomy in these cases was a totally unnecessary complication of appendectomy.

TABLE III

ACUTE HEMATEMESIS

	Number of Cases	Hematemesis only	Melena only	Hematemesis and Melena	Operation	Recovered from operation	Recurrence of hemorrhage
Gastric ulcer.....	15	9	0	6	14 G.J.*	14	0
Duodenal ulcer.....	20	6	0	14	20 G.J.*	20	1**
Gastrostaxis	4	4	0	0	4 G.J.*	4	0
Gastrojejunal ulcer..	1	0	0	1	Excision	1	0
	40	19	0	21	39	39	1

*Average interval between hemorrhage and gastrojejunostomy=3 months.

**Had slight hematemesis two months after. No further hemorrhage. Died three years later.

In only one of these patients was there any recurrence of hemorrhage. This patient had a slight hematemesis two months after operation, there was no subsequent recurrence up to the time of her death three years later from causes unconnected with her gastric condition. One of the patients was readmitted into hospital a year after his discharge, in a moribund condition from a perforated jejunal ulcer. Thus the immediate operative mortality in this series was nil, and all but two of the patients were apparently cured.

It cannot be emphasized too strongly that patients rarely die of a first hemorrhage, it is the repetition of the hemorrhage which is of such serious import. Let us beware of the specious but fallacious argument which I have heard put forward in connection with these cases. "This patient is bleeding. He will probably die. Something must be done." Even admitting that the premises are true, I see no logical or other reason for the conclusion, that because death is impending, something should be done which will probably make the patient's life shorter still. The case is quite different in acute intestinal obstruction, in which without surgical intervention death is inevitable, and so operation is justifiable even in desperate cases. In hematemesis, on the other hand, operation may be the last straw for a patient who otherwise might recover.

IMPORTANT POINTS IN THE MEDICAL TREATMENT OF ACUTE HEMATEMESIS

As regards the medical treatment of acute hematemesis the important points are:

1. Rest in bed and by this I do not mean what often passes as absolute rest. The patient should be kept *absolutely* still in bed, no movement even of the arms or legs being permitted, and should be fed by hand with a minimum of disturbance.

2. Tripier's hot water injections by the rectum, saline at a temperature of from 120° to 130° F. being used.

3. An ice pack to the abdomen.

4. Nothing should be given by the mouth for at least four days and then feeding should be commenced with teaspoonfuls of iced milk and egg (Len-

hartz). This amount is gradually increased, and the patient is kept on milk diet for two months, when some diluted beef essence may be added to the dietary.

In my experience it is not safe to commence Lenhartz diet directly after a hemorrhage; sometimes I have seen recurrence of hemorrhage apparently brought on by too early feeding. Saline injections with half an ounce of glucose to the pint are commenced soon after the hemorrhage has ceased. Rectal feeding is starvation except so far as fluids and salts are concerned, so that injections of beef tea, milk and the like are valueless.

5. Small doses of morphine are valuable although some clinicians object to the use of morphine on the ground that its use may prevent contraction of a bleeding artery. I imagine this objection to be academic rather than practical.

6. The subcutaneous injection of a ten per cent. solution of sterile gelatine in forty c. c. doses repeated daily.

7. If vomiting or hematemesis continue the stomach should be washed out very gently with warm water, and after the lavage a dose of crystalline bismuth subnitrate should be given through the tube.

It used to be taught that in hemorrhage from the socalled acute ulcer, subsequent operation is unnecessary unless the bleeding recurs. If we could be certain that the ulcer which bleeds is an acute ulcer this teaching would be sound, but as we cannot make such a pathological distinction, the only safe rule is that an acute hemorrhage requires surgical treatment to prevent recurrence. As to the time of the operation, the interval between the hemorrhage and operation should be at least three months, and if the patient is still anemic transfusion of blood before operation is a valuable adjuvant.

CHRONIC OR RECURRENT HEMATEMESIS

As regards the treatment of the chronic or recurrent hemorrhages operation should as a rule be deferred for two or three months after the last hemorrhage, according to the condition of the patient, medical treatment being carried out in the meantime —rest in bed, Lenhartz diet, saline and glucose injections by the rectum and gastric lavage. It must be borne in mind that in large excavating ulcers septic processes in the ulcer may play a considerable part in causing the hemorrhage, so that it is important not only to rest the stomach but to keep it clean. Usually these measures can be relied on to prevent recurrence, but even if the hemorrhage is repeated I wuold persevere with medical treatment. If in spite of absolute rest there is further recurrence, the question of operation may be considered, but—and this is the important point—absolute rest must have been tried and failed. Although personally I have never had to depart from my usual practice of delaying operation for two or three months, if in spite of a thorough trial of medical treatment there were many small losses of blood or more than one hemorrhage of such severity as to cause obvious anemia, I should not hesitate to operate before the onset of another attack. But my experience is that efficient medical treatment does not fail. If, however, operation be decided upon it should be preceded by blood transfusion.

NATURE OF OPERATION

There will probably be considerable difference of opinion as to the nature of the operation which should be performed for recurrent hemorrhage. Various procedures have been adopted, such as ligature of arteries, gastrojejunostomy, resection of the ulcer, cauterization of the ulcer combined with gastrojejunostomy, and partial gastrectomy. Personally, I still pin my faith to gastrojejunostomy; so far it has not played me false.

It would be outside the limits of this discussion to compare the relative merits of gastrojejunostomy and partial gastrectomy in the treatment of ulcer, but this much may be said that hemorrhage is not an indication for resection. If more than gastrojejunostomy be considered advisable, infolding the ulcer or cauterizing it by the Donald Balfour method is safer and equally as efficacious as resection. Resection has its place in gastric diseases, as in disorders in other parts of the body, but among thoughtful surgeons there is undoubtedly a feeling that this practice is being carried too far. "If your colon offends you—cut it out." If the gallbladder suggests a strawberry, cut it out, and some surgeons advise removal of a considerable portion of the stomach even for a duodenal ulcer. It would seem as if the perfect man of the future will be one who has had all his removable organs cut out and all his irremovable ones stitched in. There is bound to be a reaction against this fashion of "cutting out" when simpler means may suffice.

GASTROJEJUNOSTOMY THE SIMPLEST PROCEDURE

Some object to gastrojejunostomy on the ground that it is an indirect method of treating hemorrhage. Doubtless to deal with the bleeding point is the ideal, but it is rarely practicable. That we must look our enemy in the face is an aphorism that sounds well, but one which if applied to the treatment of gastric hemorrhage may lead to injudicious surgery. In the great majority of cases gastrojejunostomy may be relied on to prevent further hemorrhage from a gastric or a duodenal ulcer; it is the simplest surgical procedure to adopt, and it has the great advantage that we start with a definite plan in view, and so are not tempted to do an extensive exploration which may just turn the scale against the recovery of the patient. If it fail it is time enough to adopt more drastic measures. In some at least of the cases in which gastrojejunostomy has been unsuccessful the suggested alternatives would prove equally ineffective. I recall the case of a lady on whom I performed gastrojejunostomy for duodenal ulcer with recurrent attacks of hematemesis. Some years after the operation she had several recurrences. Believing that the duodenal ulcer was unhealed I reopened the abdomen, the ulcer was completely healed, but as a precautionary measure I infolded it. She continued to have attacks of hematemesis at intervals, and some years later I again opened the abdomen and explored the interior of the stomach but could find nothing to account for the bleeding. She still has attacks of hematemesis and melena occasionally, which I take it are of intestinal origin, and so would not be cured by gastrectomy.

I have had under my care or jointly with my colleagues, Dr. Fenwick and Dr. Porter Parkinson,

eighty-four cases in which there were recurrent attacks of definite and severe hematemesis. These are tabulated in Table IV.

TABLE IV.

CHRONIC OR RECURRENT HEMORRHAGE

Kind of ulcer	Number of Cases	Hematemesis only	Melena only	Hematemesis and melena	Operation	Recovered	Died[1]	Recurrence
Gastric ulcer.....	26	22	4	0	G.J.	25	1	0
Duodenal ulcer.....	52	32	4	16	G.J.	50	2	6
Gastric and Duodenal ulcer.....	4	4	0	0	G.J.	4	0	0
Gastrojejunal ulcer..	2	2	0	0	Excision	1	1	0
	84	60	8	16	84	80	4	6

[1]Four deaths, one from exhaustion, one from pulmonary embolus, and two from pneumonia.

In eighty-two of these the hemorrhage was due to a gastric or duodenal ulcer and in all of these gastrojejunostomy was performed. There were three deaths in this series, so that adding the thirty-eight cases of gastrojejunostomy given in Table III there were three operative deaths in 120 operations, a mortality rate of 2.5 per cent., which although rather higher than the death rate of gastrojejunostomy in an ordinary series of cases, cannot be considered high in view of the condition of some of the patients. Six of the patients had some recurrence, to one of these I have already alluded. Another patient had phthisis of which he died five years after operation, and it was not certain whether he had hemoptysis or hematemesis. In only one of the remaining four patients was there more than one slight attack. So that in the whole series of cases, 2.5 per cent. of the patients died from operation, in 4.2 per cent. there was a recurrent hemorrhage of a trivial character, and in ninety per cent. no further hemorrhage occurred after the operation of gastrojejunostomy. I submit that these figures justify the treatment adopted.

The treatment of acute hematemesis is one of the most absorbing and fascinating problems of medicine—absorbing from the satisfaction it affords when we see a patient literally snatched from the very jaws of death, and fascinating because it demands supreme courage—courage to perform that most difficult task of waiting and watching. When by the bedside of a patient so blanched by hemorrhage that death is painted on her face, whose flickering pulse is witness to the slender thread on which life hangs, it is not easy to resist the insistent question of the relatives, "Cannot something more be done?" To answer in the negative requires no little courage. It is easy to do something, but if that something be an operation, we shall probably have an opportunity of wondering at leisure what would have happened if this operation had not been done.

Some of you remember how, shortly before the war, the passengers from the burning ship *Volturno* were rescued in midatlantic by Captain Barr of the Cunard liner *Carmania*. At first the sea was so rough that in spite of the urgent appeals, not only of the passengers but of his officers, Captain Barr resolutely refused to allow volunteers to man the boats until the gale had died down. He stood by the doomed ship for two days and eventually all the passengers and crew were rescued except a few who had jumped overboard in a state of panic.

We came home from America by the *Carmania* on her next voyage. One evening at dinner one of the passengers was criticizing Captain Barr and suggested that he might have acted sooner than he did, and he appealed to one of the stewards to confirm his opinion. "I think, sir," replied the steward, "that it was fortunate that there was one cool head on this boat or a good many lives would have been lost that day." It was a worthy tribute to a fine example of supreme moral courage. Captain Barr told me that it was the most difficult and trying situation he had ever faced, to resist the appeals to attempt to save the lives of those who otherwise seemed doomed to a watery grave. By the result his judgment and his courage were vindicated.

Inaction is often the wisest and only safe course, but it is always the more difficult. Anyone can try to do something, knowing that although he fail he will be applauded, even if the failure be at the sacrifice of human life; but it is the strong man who refuses to be tempted into taking risks which he believes can serve no useful purpose.

In conclusion, if I may be permitted to offer one word of advice to my younger hearers it is this. When called upon to treat a patient with hematemesis, take your courage in both hands and trust Nature. Be assured that if you trust her and assist her, she will not fail you, and your reward will be that which always seems to me the greatest satisfaction that the practice of our art can give, the knowledge that you have steered a frail bark back to safety without encountering the perils incidental to the handicraft of our art.

CONCLUSIONS

1. Hemorrhage from gastric and duodenal ulcers may be considered in reference to two distinct groups of cases, the sudden acute hemorrhages and the chronic or recurrent hemorrhages.

2. Surgical measures have no place in the immediate treatment of acute hemorrhage.

3. In the medical treatment of gastric or duodenal hemorrhage *absolute* rest is a most important factor.

4. When the patient has recovered from the resulting anemia operation should be performed to prevent recurrence. The interval between the hemorrhage and operation should be at least three months.

5. In the first instance the chronic or recurrent hemorrhages should be treated medically, operating when the patient's condition is favorable.

6. Regular gastric lavage pending operation is an important detail of the medical treatment of the chronic or recurrent hemorrhages.

7. As regards operative measures, gastrojejunostomy is the simplest and safest procedure, and in the great majority of cases may be relied on to prevent recurrence of the hemorrhage.

8. Careful and prolonged medical treatment *after* operation is equally as important as medical treatment *before* operation.

9. With this combination of medical treatment followed by gastrojejunostomy the mortality rate from hemorrhage in gastric or duodenal ulcers should not exceed four per cent. and freedom from recurrence may be expected in ninety per cent. of the cass.

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Carcinoma of Rectum and Rectosigmoid

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According to statistics, carcinoma of the rectum or rectosigmoid comprises about four per cent. of all malignant growths of the body. In the gastrointestinal tract the stomach is involved most frequently, but approximately eighty per cent. of all intestinal cancers are in the rectum or rectosigmoid.

The urgent call of the cancer therapist is for early diagnosis. The campaign of the American Society for the Control of Cancer, by popular education in the early symptoms of malignant disease, is showing results, especially in external growths and notably in carcinoma of the breast. In internal cancer, however, as a rule there is at first no tumor or local change visible to the patient, and the early symptoms are vague. This is particularly true of malignant disease of the large bowel. We might well speak of the "silent" rectum so far as any outspoken symptoms manifest themselves early. This is in the nature of a disease so insidious as cancer, which may remain almost symptomless for many months and eventually force the patient to consult a physician for symptoms of marked ulceration or obstruction.

SYMPTOMATOLOGY

The classical symptoms of carcinoma of the rectum, as originally written and handed down with little variation from one textbook to another, are largely a story of terminal pathology. This chapter must be revised and the *early* symptoms stressed if any efficient educational stimulus is to stir the laity and the profession to a recognition of beginning malignancy. Evidence of the need of this teaching is the fact that six to eight months is the average period of time from the onset of the first symptoms till the patient reaches the surgeon.

The material of this paper comprises 110 cases of carcinoma of the rectum or rectosigmoid, in all of which I examined and studied the patients thoroughly and operated upon many of them. There were eighty males and thirty females.

AGE INCIDENCE

	Male.	*Female.*	*Total.*
10 to 19 years.....	1	0	1
20 to 29 "	5	0	5
30 to 39 "	6	4	10
40 to 49 "	16	10	26
50 to 59 "	28	10	38
60 to 69 "	14	6	20
70 to 79 "	10	0	10

Of the total number, sixty-four patients, or fifty-eight per cent., were of the socalled cancer age of forty to sixty years; thirty, or twenty-seven per cent., were over sixty years of age, and seventeen, or fifteen per cent., were under forty years. The youngest patient was a youth, aged nineteen, with colloid carcinoma. Three cases in persons under seventeen years have been reported, viz., Kupferle (Czerney's clinic), one aged thirteen, and Schneider (Rostocker clinic) two cases in persons aged, respectively, fourteen and fifteen years. Thus it is evident that age *per se* is not a diagnostic point in an individual case.

WEIGHT LOSS

Loss of weight averaged eighteen pounds in this series. One patient had lost sixty pounds, but several patients had not lost any weight. Emaciation is, in fact, a late symptom of carcinoma, and maintenance of weight for several months after its onset does not exclude the disease.

PAIN

Exquisite pain is a cardinal symptom of epithelioma of the anus, but, in general, in rectal carcinoma, as usually situated, pain is not pronounced unless the growth is very low, or until it has extended widely, or has caused marked obstruction. Frequently, however, there is a feeling of fulness in the pelvis, of pressure and obstruction in the rectum, and often colic at stool. Anemia and weakness develop in the later stages of the growth, and are signs of an advanced process.

WASSERMANN REACTION

The Wassermann test of the blood should be made in every case of tumor, stricture, or ulcer of the rectum. It was positive in seven cases of this series. The simultaneous occurrence of syphilis and cancer is, therefore, not unusual and warns us to be on our guard lest we mistake cancer for syphilis of the rectum as well as the development of cancer on a syphilitic soil.

DURATION OF SYMPTOMS

The onset was gradual in seventy-seven cases and sudden in thirty-three. The duration of symptoms had averaged six months for the males and 7.8 months for the females. Three weeks was the shortest period, but in several cases it was eighteen months. Meanwhile, a few of these patients had not consulted a physician, but the majority had done so and the condition had been diagnosed and treated as stomach trouble, indigestion, constipation, chronic colitis, bloody dysentery, tuberculosis of the rectum, bleeding polyp, anal fissure (three cases), hemorrhoids, rectal fistula, carcinoma of the prostate and retroversion of the uterus. Hemorrhoids was the favorite diagnosis, and several patients had been operated upon only recently for this condition and two for anal fissure, although the growth was then present and palpable. It is, indeed, regrettable to note that the reports of different series of cases indicate that the disease, until far advanced, is regarded as hemorrhoids in from ten to fifty per cent. of cases.

What, then, are the symptoms of beginning carcinoma of the rectum and rectosigmoid? Careful inquiry in 110 cases showed the first symptom to be constipation in sixty-eight cases, or sixty-two per cent.; second, bleeding or cancer diarrhea, in thirty-seven, or thirty-three per cent., and pain in the remaining five per cent. In the latter it should be noted that the anal canal was involved. Bowel action was stated as regular in six cases, but in the great majority there was obstipation although there were frequent passages of discharge (cancer diarrhea). In-

digestion, often accompanied by nausea, was an almost constant associated early symptom.

When the ulceration and secondary infection of the second stage develop, frequent foul discharges of mucus, blood and pus occur, constituting the socalled cancer diarrhea, although the patient is still really constipated. Finally, the late symptoms of intestinal obstruction may supervene.

Anemia, emaciation and weakness are not characteristic of the first stage, but are progressive in the second and third stages, when the cachectic patient himself suspects the true nature of his malady and is probably hopeless for curative surgery.

There is, in fact, no one symptom of early carcinoma of the rectum and sigmoid colon that is pathognomonic, but an attack of obstinate constipation in a person with usually normal bowel action, desire to go to stool in the morning on arising, with no result or only the passage of flatus and a little mucus, probably bloodstreaked; an abnormal rectal discharge and a vague, ill defined feeling that something is radically wrong in the lower abdomen, or a feeling of obstruction in the rectum, form a symptom complex that is present in nearly every case of beginning carcinoma of the sigmoid and rectum. When such a complex is elicited by close inquiry, it becomes our duty to make a thorough examination. Failure to make the examination, or to see that it is made, is a serious dereliction of duty.

PHYSICAL EXAMINATION

The physical examination is both general and local. If the patient gives a history of cancer diarrhea and marked obstipation, is emaciated, weak and anemic, he is probably already in the stage of terminal pathology and not of surgery. Jaundice, ascites and a visceral tumor, especially of the liver, indicate hopeless metastases. The sigmoid colon is often more prominent than normal, and the masses, sometimes felt in the left lower quadrant of the abdomen and higher on the left side, usually prove to be scybala. If the inguinal glands, which receive the lymphatic drainage below the anorectal line, are involved, recurrence will probably follow operation.

The local examination includes palpation, proctosigmoidoscopy, biopsy and the röntgen rays. In women a vaginal examination should be made first to determine the position of the uterus, and the condition of the culdesac. As a rule, digital examination of the rectum is made with the patient in the Sims's position; but a growth not otherwise palpable may sometimes be felt with the patient in a squatting posture or under general anesthesia, by making counterpressure on the abdomen.

In this series of 110 cases the tumor was palpable in ninety-nine so that in only eleven cases, or ten per cent., was the proctoscope essential to determine the presence of a growth at a higher level. The tumor involved the anterior rectal wall in thirty-nine cases, the posterior wall in thirty-three cases, was lateral in seven and annular in thirty-one. The growth felt movable in sixty-two cases and fixed in forty-eight. In the majority the neoplasm was ulcerated, and in ten cases infiltrated adjacent organs. The segment of bowel directly involved in the growth varied from five to ten cm. in length. Clinically the growth proper may be:

1. Protuberant, that is, growing into the bowel lumen, of small or large size, superficially ulcerated, and movable with the mucosa. This type is relatively benign in that few or no lymph glands are involved.

2. A craterlike, excavated growth, with indurated base and nodular margins, infiltrating the musculature and penetrating the lymphatics early.

3. An annular, constricting growth, occurring especially at the rectosigmoidal juncture, rather definitely limited to the bowel wall and tending to produce early stenosis.

These details of size, form, position, mobility or fixity, and ulceration of the growth, involvement of adjacent organs and metastases, are all prime factors of prognostic import. For lesions beyond reach of palpation, the modern pneumoelectric proctosigmoidoscope becomes an elongated finger with a human eye. By this instrument of precision the examiner can readily inspect the entire rectum and anal canal and, in approximately seventy-five per cent. of cases, the distal loop of the sigmoid colon. No anesthetic is employed, but skill in passing the instrument and correct interpretation of the findings are to be acquired only by extensive experience. The graduated tube of one half inch calibre can usually be passed through a stricture or beyond a tumor to the normal mucosa above, thus determining precisely the length of the process. Constriction by the growth prevented the passage of the tube in only twelve cases of this series.

BIOPSY

In accessible growths of the terminal colon, frank carcinoma that can be seen or felt is so characteristic in its appearance and feel to the experienced examiner that biopsy for diagnosis is unnecessary. There are, however, certain cases of tumor, stricture and indurated ulcer that baffle the diagnostic acumen of the most experienced. I know of two instances, at least, in which the rectum was removed (one by myself and another by a colleague) for presumable carcinoma, but careful histological study of the specimens demonstrated only chronic inflammation. Hence, in these cases of doubtful diagnosis, I believe in and practise biopsy to solve the problem at once. Some years ago I devised a specimen forceps for use through the proctoscope which is practical and satisfactory. Biopsy is performed, when indicated, as part of a routine examination in the office, without anesthesia and without alarm to the patient. I am aware of the objections raised to biopsy, viz., hemorrhage, infection, bowel perforation and possibly dissemination of the growth, if it is malignant. When biopsy is performed correctly, bleeding, infection and perforation do not occur. As to the dissemination of cancer cells, I have seen no clinical evidence of it and question its occurrence more rapidly than normal if biopsy is followed by immediate cauterization of the wound.

In this series of 110 cases, biopsy was performed in thirty-four. The diagnosis was adenocarcinoma in twenty-five cases, epithelioma in four, colloid carcinoma in two, malignant adenomatous polyp in two, and angiosarcoma in one case.

RÖNTGEN RAYS

There is a growing tendency among medical men, when the symptoms indicate rectosigmoidal pathology, to refer the patient at once to the röntgenolo-

gist. This substituting, in an accessible field, the indirect laboratory method for direct palpation with the experienced finger and inspection with the intelligent eye is, in my opinion, a step backward in diagnosis. For the diagnosis of lesions of the rectum, radiograms are, as a rule, not only unnecessary but may be misleading; for the growth is often missed. Palpation and proctosigmoidoscopy, with a biopsy in certain cases, furnish all the precise data required. For lesions of the distal sigmoid, in the seventy-five per cent. of cases in which the tube will negotiate the rectosigmoidal angle, the sigmoidoscope supplies accurate and reliable information. Nevertheless, in all cases of tumor, stricture and indurated ulcer of the bowel without urgent symptoms, such as obstruction, radiograms should be obtained to detect, if possible, other or similar lesions, sometimes present, beyond reach of the tube. Carmen states that seventy-five per cent. of tumors of the colon can be detected by the x ray.

DIFFERENTIAL DIAGNOSIS

Anal fissure.—At its onset epithelioma of the anus closely simulates a painful fissure or irritable ulcer of the anus both in its symptomatology and its appearance. Bidigital examination, however, detects the deep, hard induration characteristic of epithelioma and, if there is serious doubt, immediate biopsy should be done.

Hemorrhoids.—Carcinoma is frequently accompanied by hemorrhoids which too often are diagnosed as the only lesion present. Hemorrhoids should never be treated before examination of the rectum to eliminate other pathology.

Thrombosis.—Thrombosis of the rectal veins usually occurs in men with sclerosed vessels. The veins may rupture and bleed profusely, and to palpation suggest a neoplasm. Proctoscopy is our surest means of recognizing them.

Ulcer of rectum.—Large, nonsyphilitic, indurated ulcer of the rectum may, under inspection and palpation, so resemble beginning carcinoma that only a biopsy can differentiate it, as in the two cases noted heretofore.

Chronic inflammations.—Of the chronic inflammations, syphilis manifests itself here either as a tertiary ulcer or its sequel, a stricture. A history of infection and a positive Wassermann reaction are most helpful in deciding if we remember that the lesion may also be carcinoma in a syphilitic.

Tuberculosis, the other principal chronic inflammation, may be present as, 1, a tuberculous ulcer of the rectum; 2, a tuberculoma or hyperplastic tuberculosis, which in all respects resembles a protuberant carcinoma and can be differentiated only by biopsy; 3, tuberculous mesenteric glands which, before suppuration, feel like a rectal tumor but tuberculosis will be found elsewhere in the body, and 4, plastic tuberculosis of the culdesac of Douglas.

Mucous polyp.—This is a large, solitary, histologically benign growth usually situated in the rectosigmoid. It produces bowel and general symptoms like carcinoma, but can be differentiated readily by sigmoidoscopy.

Multiple adenomata.—In this condition literally thousands of small growths, some pedunculated but the majority sessile, stud the mucosa of the colon and rectum and are to be recognized by proctosigmoidoscopy. If neglected, multiple adenomata usually undergo malignant change into adenocarcinoma, therefore, early recognition and appropriate treatment are essential.

Diverticulitis.—This practically never occurs in the rectum, but is relatively common in the sigmoid. The symptoms of acute diverticulitis are those of acute appendicitis transferred to the left side, but chronic diverticulitis with slow infiltration and thickening of the bowel wall and mesentery resembles malignant disease. Aside from laparotomy, röntgenograms are of the greatest aid in its diagnosis. In the days before the advent of the x ray and before the pathological examination of all specimens removed at operation was a routine measure, many cases diagnosed at laparotomy as carcinoma of the sigmoid, which receded after colostomy, were undoubtedly chronic diverticulitis.

Primary carcinoma of the prostate.—Rectal palpation detects the asymmetrical enlargement, nodular, hard surface and the fixation of the gland, and usually the mobility of the rectal mucosa opposite. The urological symptoms will, of course, help to differentiate.

Douglas's culdesac.—Abnormalities felt in this situation require careful examination, for not only do acute but certain chronic conditions manifest themselves here. An important one of these is implantation carcinoma in which cancer cells, detached from a tumor at a higher level in the abdomen, gravitate to the culdesac, there engrafting themselves on the peritoneum and forming an induration described by Blumer as a "rectal shelf." When this is felt by rectum we know that the tumor is secondary and that radical surgery is contraindicated.

Tuberculous peritonitis.—Plastic tuberculous peritonitis may, to palpation, resemble carcinoma of the culdesac, but is to be differentiated by the history, symptoms and other physical signs.

Uterine displacement.—Regarding displacements of the uterus, it seems to me there should never be a doubt as to its position if it cannot be determined by bimanual examination. The uterine sound, introduced aseptically, is a reliable guide to its position, and if the corpus uteri is anterior the tumor felt by rectum is not the fundus of the uterus but may be a tumor of the uterus, as a fibroid, a growth or inflammatory process in the culdesac, or a tumor of the rectum, the latter to be recognized by proctoscopy.

Finally, early recognition of a tumor of the rectum or rectosigmoid is due, not so much to a lack of knowledge, as to failure to apply, at the earliest moment, the knowledge we possess.

SURGICAL PROGNOSIS

In the present state of knowledge of the therapy of intestinal carcinoma, it may be stated as an axiom that removal of the growth by radical surgery is indicated in all operable cases, and irradiation in all inoperable cases. Partial operations in radically inoperable cases are harmful and should not be done. Colostomy is a palliative measure of the highest value in carcinoma of the lower bowel to relieve obstruction, actual or threatened, preparatory to surgical removal of the growth, and as a preliminary to radium therapy. At the same time the operator may ascertain gross evidence of abdominal metastases.

Surgical prognosis concerns itself with operative mortality and recurrence *in loco* or metastatically. Shock, hemorrhage, pneumonia, suppression of urine and infection are the chief causes of operative mortality. To combat these, Crile (1) has adopted, with marked success, the following sound prophylactic measures: 1, Blood transfusion before and after operation; 2, hypodermoclysis to maintain water equilibrium; 3, wrung out iodoform gauze left in situ on all raw surfaces four or five days to prevent contamination becoming infection, and 4, nitrous oxide oxygen analgesia and local anesthesia to minimize interference with the internal respiration of the cells. Evidence of the value of these precautions in combating in anticipation shock, acidosis, toxemia and infection, are forty-five cases in which radical operation was performed in two stages with only one operative death (pneumonia).

Recognizable metastases in the viscera or peritoneum, of course, preclude radical surgery. The borderline of operability has risen in recent years so that involvement of adjacent organs, such as the prostate or uterus, may not always bar radical surgery. Simple infection through the ulcerated tumor may explain enlargement of the regional lymph nodes, so that a patient should not be denied operation because of regional glandular involvement alone. Pennington (2) collected data of 997 necropsies. The regional nodes were involved in 334 or thirty-three per cent.

PATHOLOGY

Hausmann, of Vienna, in a study of 112 cases of carcinoma of the rectum that were examined post-mortem, found the disease localized in the bowel wall in fifty-five. The rectal fascia is the natural barrier to extension beyond the bowel wall proper.

McVey (3) has studied one hundred specimens removed by operation at the Mayo Clinic. The ano-rectal lymph nodes dissected out numbered six + for each specimen. No glandular involvement was shown in fifty-three per cent., slight involvement in thirty per cent., and marked involvement in seventeen per cent. McVey concluded that "the size of the growth cannot be relied on as an accurate index of the probable lymphatic involvement. The growths without lymphatic involvement tend to grow into the lumen of the bowel. Growths with slight lymphatic involvement tend to spread by direct extension and are slow growing. Carcinoma of the rectum, with extensive lymph glandular involvement, tend to metastasize through the lymph stream early. Occasionally metastasis may take place by embolic breaking off into the portal vein. Systematic microscopic examination of all the regional lymph nodes in carcinoma of the rectum appears, as it does in carcinoma of the stomach, to be the best method of ascertaining an accurate prognosis for the case."

On the other hand, Jones and McKittrick (4) reported clinically that although the pathologist found no involvement of the perirectal tissue or glands in sixty-eight per cent. of specimens removed by them at operation, nevertheless all but 11.3 per cent., or less, of the patients seen were dead within five years, whether metastases were found outside the bowel or not. Ninety-two per cent. of their patients dying within three years had involvement of the liver, regional glands or perirectal tissue at the time of operation, yet twenty-three per cent. of those having metastases solely in the regional glands or perirectal tissue lived three or more years.

Miles (5), from a study of recurrences in four series of operated cases, determined three zones of lymphatic spread, viz., downward into the perianal skin, external sphincter and ischiorectal fat; laterally into the fascia propria, levatores ani, retroperitoneal lymph glands, the prostate and base of the bladder and, in females, the vaginal wall, cervix uteri and base of the broad ligament; and upward—the most important and rapid—into the peritoneum of pelvic floor, whole length of the pelvic mesocolon and paracolic lymph nodes. In a word, "all tissues in the lymphatics leading from the primary growth are to be considered invaded territory" and the operation reasonably to assure nonrecurrence must include them in a bloc dissection.

OPERABILITY OF RECTAL CARCINOMA

Although the operability of carcinoma of the rectum has risen in recent years, yet thirty to over fifty per cent. are still inoperable when first seen by the surgeon. In this series of 110 cases the operability was sixty-one per cent.

Location.	Radically Operable.	Inoperable.
Anorectal	6	8
Ampulla	50	26
Rectosigmoid	11	9
Total	67	43

Radical operation was refused in nine operable cases. It is a remarkable psychological fact that the same patient who has refused radical surgery when first advised may return months later, under the urge of symptoms of an advanced process, and request operation. In fifty-one of the sixty-seven operable cases a radical operation was performed, twenty-one by myself and thirty by other surgeons. In the series of thirteen in which I performed perineal (Quenu-Tuttle) extirpation, the only operative death was from pneumonia. Two patients died of intercurrent conditions in five weeks and two years respectively. Recurrence occurred in four cases: three months, ten months, one year, and two years respectively. Six patients, or forty-six per cent., are living, clinically free of the disease, two for one year, two over three years, and two over five years, the longest being six years and nine months. Following palliative colostomy, fifteen patients lived from two to eighteen months.

The posterior operation was practised more commonly a few years ago, but because of recurrences has been replaced largely by the combined abdominoperineal operation of Miles, by which the "zones of lymphatic spread" can be removed more thoroughly. Nevertheless, perineal extirpation is, in my experience, the operation of choice in old, obese, flabby individuals, having a growth situated low. The operative mortality of the posterior operation, gathered from large statistics, is about sixteen per cent.

The ideal operation, from anatomical and functional points of view, is a one stage abdominoperineal extirpation, performing an enteroanastomosis by the Balfour or some other method, or drawing the sigmoid colon through the anus and fixing it there. Constriction at the point of anastomosis is usual but

is amenable to dilatation. From the viewpoint of pathology, present surgical opinion is veering toward a permanent colostomy, to be followed at once or some time later by extirpation of the entire bowel distal to the colostomy and a complete dissection of the pelvis. The latter operation minimizes the chance of recurrence and gives the maximum number of clinical cures at the end of three and five years, but the immediate mortality is increased and the patient is left with an undesirable abdominal anus.

The operative mortality of the combined abdominoperineal operation as reported by a number of surgeons having large series of cases varies from 2.2 to 25 per cent. My own series of eight cases is too small to be of statistical value, but a single case is cited to illustrate the value of proctoscopy and biopsy in diagnosis and an ideal operative result.

Case.—A. R., a woman, aged sixty-two, was referred for inveterate constipation and slight rectal bleeding, attributed to hemorrhoids. Her general health and physical condition were good. No active hemorrhoids were present and digital examination of the rectum was negative. Proctoscopy, however, showed a constricting growth of the rectosigmoid, and biopsy proved it to be adenocarcinoma. On February 3, 1923, through an abdominal incision the rectosigmoid was mobilized and the tumor bearing segment excised well beyond the growth. The portion of rectum remaining was then everted, the sigmoid drawn out through it, and end to end union made by interrupted sutures. This patient is now in excellent condition. She has a formed stool daily without cathartics, her weight is normal and only a linear annular scar marks the site of the rectosigmoidal anastomosis.

CONCLUSIONS

No single type of operation is suitable for every case of carcinoma of the rectum or rectosigmoid. To obtain the best results, the surgeon must be familiar with various types of operation and use the method best suited to the individual case, but always observing the imperative rule that no operation can promise reasonable hope of success unless it removes, *en bloc,* the tumor and the regional tissues receiving its lymphatic drainage, and a wide margin of apparently healthy tissue.

Although the results obtained are far from ideal, I feel that they are sufficiently encouraging to stimulate our efforts toward earlier diagnosis, toward the employment of prophylactic measures to reduce operative mortality, toward improvement of technic to prevent the operative dissemination of cancer cells, toward better anesthesia, and to justify, in general, an optimistic attitude toward radical surgery in operable carcinoma of the rectum and rectosigmoid.

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Portal Cirrhosis from a Gastroenterological Viewpoint*

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The study of autolysis and atrophy (1) proves that the liver is particularly prone to intoxication and atrophic changes. The autolysis due to phosphorus, phosgene and mustard gas in which oxygen causes intense acid production with destruction of the hepatic cells is well known. Chloroform causes a more or less profound atrophy of the liver, depending upon the length of exposure due to the breaking up of chloroform in the liver cells through phosgene to hydrochloric acid. Graham has shown that other halogen-compounds similar to chloroform produce like results. Uranium salts produce atrophic changes in the liver. The liver is sensitive to injury by toxins of bacterial origin (2, 3, 4, 5). Thus the injection of hemagglutinins, tetanus and diphtheria toxins, streptococci and their decomposition products, have been found to injure the liver and lead to necrotic changes suggestive of some clinical conditions such as the liver in eclampsia or acute yellow atrophy.

Any medical student who graduated in medicine from a school connected with a large municipal hospital has had ample opportunity to observe cases of portal cirrhosis and examine the pathology of such livers. Chronic alcoholism had been rife for many years, constantly recruiting hospital attendance to such an extent that the etiological connection between this habit and disorders of the liver was recognized. Beginning about twenty-five years ago and continuing up to the broad establishment of abdominal surgery (about ten years ago) the importance of alcohol in this connection continued. Still there were several factors that might have received deeper attention even before ten or fifteen years ago, the most important being that if alcohol as such was responsible for the liver disorder why was it that the condition was more prevalent in those who drank heavily of the malt and fermented fluids (such as beer and ale) as compared with moderate drinkers of spirituous or distilled liquors (like whiskey and gin)? Another question difficult to answer is, Why did one individual acquire the condition from perhaps moderate drinking, and under the same conditions another had no clinical manifestation of it when the second had drunk longer and more heavily than the first? Nevertheless, the one cardinal fact always existed, namely, that heavy and chronic drinking of alcoholic liquors ran rather uniformly throughout all

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the cases that were seen, and it was the findings obtained in the operating room when an examination of the liver was made during laparatomies that began to throw some additional light on portal cirrhosis in an etiological way and also proved that this condition of the liver was far more common than it was believed to be.

In 321 laparotomies performed in my practice in 1914 there were 39 instances of definite cirrhotic changes in the liver. Up to the end of 1921 there have been 2,567 laparotomies with records of findings in which terms like "cirrhosis of the liver, cirrhotic liver, hepatic fibrosis, and hobnail liver occur 221 times, or roughly in about eight per cent. In these 221 people distinct chronic alcoholism was present in none. Moderate social drinking of varying grades but all within reason was present in seventy-two men and thirty-eight women. Those who took alcoholic drinks not oftener than once a week at any time in their lives represented thirty-seven men and fourteen women. We then had left sixty people—twenty-nine men and thirty-one women—who had never drunk anything alcoholic and who, nevertheless, had macroscopic cirrhosis of the liver. This brings up three questions. What actually causes cirrhosis of the liver in nondrinkers? In drinkers (accepting alcohol as a factor) is it direct or indirect? Is there a symptomatology of these moderate grades of cirrhosis in which hematemesis, ascites and the classical end symptoms apparently do not occur?

Portal cirrhosis is supposed to occur most frequently in the fifth decade of life and judging from the time of the distinct symptoms of the condition this is correct, yet the average age of my patients was thirty-eight years. In Osler's *Modern Medicine* (6) the following occurs: "There is reason to believe that poisons, particularly the fatty acids (lactic, butyric, acetic, valerianic, etc.) and other ill understood enterogenic toxins associated with different forms of indigestion, may be the causative factors, especially in nonalcoholic subjects who give a history of long continued indigestion, following or associated with overindulgence in seasoned foods, spices, etc. (dyspeptic cirrhosis, Budd's nonalcoholic cirrhosis). The fatty acids and other toxins rarely may be ingested preformed with the food; but they are more to be manufactured in the intestinal tract in cases of gastrointestinal catarrh (fermentative dyspepsia); experimentally lesions resembling those of cirrhosis have been induced by injecting fatty acids into lower animals. To the influence of enterogenic toxins, spices, etc., may also be attributed the cirrhosis occurring among the Hindus, Egyptians, and other races, who, avoiding alcohol, nevertheless often eat food that is not above reproach and are quite partial to condiments and spices, such as ginger and pepper, often in decoctions."

In the saccharobutyric type of chronic intestinal toxemia the condition is due to the large numbers of strict anaerobes having their location mainly in the colon and lower ileum. The chemistry in these types of infections is definitely acid in contradistinction to the alkaline found in putrefactive conditions. Without burdening you with a detailed presentation of the bacteriology characterizing this type of toxemia, it serves our purpose here to say that the Bacillus coli content is always low or negligible in a restrictive sense. The organisms present are capable of attacking the carbohydrates and proteins in a vigorous manner with the formation of butyric, indolamido, propionic, caproic, valeric, lactic, oxalic and indolacetic acids. The stools are usually acid in reaction although this may have been neutralized by bases formed in the process of putrefaction, and especially by ammonia and ammonium butyrate. That there are other products in this type of infection is proved by the large marsh gas formations from the Bacillus putrificus which is as distinctive as the acidity from the Bacillus aerogenes capsulatus and the gram positive cocci. There may also be bacterial toxic substances for these from the Welch and the Bacillus putrificus is easily proved. Practically all these products are volatile or readily soluble and it is reasonable to assume that this resorption into the portal system occurs where their production is excessive in the intestine.

My interest in this connection began in 1914 when at operation for cholelithiasis on a young Quaker woman who had never drunk anything alcoholic in her life, a marked hobnailed liver was disclosed. This woman since then died after repeated tappings from hematemesis. She had a marked saccharobutyric toxemia for which no special treatment had been carried out. Beginning early in 1915 practically every case was studied and I have yet to see one instance where, at operation, whether the individual were alcoholic or not and a portal cirrhosis was disclosed, there was not present and easily demonstrable a saccharobutyric toxemia in the intestinal canal. My operative records are now most complete in 194 of such cases, and from them it seems logical to assume that the etiological connection between this type of intestinal toxemia and portal cirrhosis is of more than passing interest, especially in view of the fact that saccharobutyric toxemia is such a common condition and moderate enlargement and increase of firmness of the liver are so often met with in abdominal examinations. In this type of toxemia, drinking of alcohol and fermented malt fluids, feeds the infection present and enhances it.

It is an old teaching in medicine that where the spleen is palpable in the abdomen it is enlarged. It is just as accurate to take as a clinical dictum that when the liver is distinctly palpable in the abdomen, either the left lobe alone or the lower part of the entire organ is enlarged. Ordinarily, the liver is not palpable, there being elicited only a vague and indefinite sense of fullness in the epigastrium. Usually the right lobe is entirely above the confines of the lower margin of the costal margin and ribs. The left lobe sweeps across the abdomen in the epigastric region, and here that indefinite sense of resistance may be best noted. Under normal conditions the edge is never palpable. When the liver is enlarged its increase in bulk more completely fills the lateral dimensions, which is not demonstrable. What may be noted is its increase of bulk causing a lengthening of its vertical diameter. This drives the lower edge downward and below the costal margin on the right and deeper into the abdomen in the midline. In all abnormal states of the liver there is an increase in

firmness of the organ, so much so that at times the convex anterior portion of the left lobe is easily palpable and the more often a real pathological condition is present the more definite the palpability of the edge. The liver hugs the under surface of the right diaphragm rather closely and the percussion of this concave surface, with the distinct change in the percussion note as we come down from the thorax to the abdomen, is distinct and marked. Ordinarily this corresponds at its highest point on the right to the same interspace as the heart apex on the left, namely the fifth. Under all conditions the percussion should cease at noting this upper margin of the organ, because it is a fact that its percussion in the abdomen is too open to error and it is far better examined by light palpation. This is easily possible in obese persons. Upon liver examination it is surprising how many instances of moderate degrees of enlargement of the organ are met with in clinical practice. One rarely hears or reads any statements of the size and firmness of the liver and yet I am meeting with it daily. If attention is paid to this item in physical examination and clinical reports are checked up with the findings at operation and postmortem, the significance is at once apparent.

The records of cases of saccharobutyric toxemia show that enlargement of the liver is frequently present. Usually this is manifest in an enlargement of the whole organ, so that the lower part of the right lobe is lower than normal, although this may not be palpable on the right of the mammary line and in the flank. It is most easily felt in the left lobe which not uncommonly is distinctly firmer than normal, the convex surface can be made out, although palpability of the liver edge is uncommon—in fact, rare. The deduction as to whether a pathological condition is present in the organ or not is not always easy, mainly because in younger persons gallbladder disease (usually cholelithiasis) often is present in this type of toxemia and in cholelithiasis enlargements and increased firmness of the left lobe of the liver are commonly found. In older subjects distinct changes in the heart, vessels and kidneys may exist and more or less enlargement of the liver be present in disorders of these organs. When, however, these disorders can be eliminated, as well as other conditions in which liver enlargements may be found, and especially when the liver enlargement is practically permanent after the toxemia has had attention, more or less cirrhotic change in the liver should be assumed. When a distinct portal fibrosis has occurred, a complete reduction in the size of the liver is difficult to bring about and such benefits as result occur slowly and require a considerable length of time. I have observed cases in which a rapid reduction in the size of the liver was quickly brought about, but in these patients I have believed that only congestive and not fibroid deposit was responsible for the enlargement.

A critical study of the symptomatology of portal cirrhosis before hemorrhages and ascites in a considerable number of cases leaves practically nothing definite to describe. An analysis of the symptoms which are present before these end results occur in the definite alcoholic cases shows that for often a year or two there has been distress in the stomach region, more or less independent of meals, but usually intensified by excess quantity. In a large proportion of cases, however, there are no symptoms at all before the hemorrhages or the ascites occur. Then there are other cases where the cirrhosis of the liver may remain latent for years. It is probable that when symptoms occur early in the disease they are caused by an ill defined active congestion of the organ. Occasionally there is a sense of weight in the right hypochondrium, perhaps short transitory attacks of slight fever, a mild jaundice of a few days' duration, and sometimes a sense of pain and discomfort in the liver region. When such are present tenderness on deep pressure over the liver may be elicited. In many more cases the early symptoms are those that cannot be dissociated from a gastroenteric catarrh or the saccharobutyric toxemia. Among these can be enumerated coated tongue, flatulence, irregular appetite, nausea and sometimes vomiting in the early morning, alternating constipation and diarrhea, hemorrhoids, and similar diseases. The functional capacity of the stomach and intestines may be diminished, the gastric and intestinal juices being affected by the catarrh. There may be loss of weight due to diminished resorption power of the intestines, often inhibiting peristalsis. Tympanitic attacks may occur. The symptoms that more particularly are the result of the intestinal toxemia are fatigue, anorexia, insomnia, irritative skin lesions, asthenia, substernal distress, and those that centre around the diagnoses of gastric atony with hypersecretion, ileal stasis, chronic colitis and gallbladder conditions. I need not say anything about the late symptoms due to portal blocking, all of which are well known to you.

In the average case that is referred to a gastroenterologist, where there is enlargement of the liver and the laboratory suggests the presence of a saccharobutyric toxemia, whether the subject be alcoholic or not, a degree of cirrhosis of the liver should be suspected when no other cause for liver enlargement exists. A reasonably rapid reduction in the size of the liver is not accomplished on treatment—say in four weeks' time. I believe with Foxwell that whatever the stage of the cirrhosis, enlargement of the liver always occurs, and in the grade of cirrhoses cases I am undertaking to describe small livers are never seen. Quite naturally since the size of the liver is the main presenting symptom leading to suggestion of the condition one must exclude other causes of enlargement of the liver such as passive congestion, fatty liver, malaria, syphilis, and malignant disease. Viewing it from another angle, when a diagnosis of saccharobutyric toxemia in the intestine is warranted, the presence of an enlarged liver that can not be accounted for from some other cause should warrant the diagnosis of cirrhosis.

Unfortunately the term cirrhosis of the liver has a limited association in the average medical man's mind and is entirely encompassed in the picture seen in the late stages of a lethal case. On hearing it he promptly thinks of an old alcoholic with hematemesis, ascites, enlarged veins, etc., and not seeing these in the case before him criticizes the diagnosis. He fails to remember that in these extreme cases the disease existed for years before these end symptoms occurred, and that while the diagnosis of cirrhosis of the liver in the earlier stages may have been a

difficult and inconclusive matter for him, it could and should be made far more frequently than is being done. If he pays more detailed attention to the examination of the size and consistency of this organ in his dyspepsia cases, and especially if he observes the operations on some of these patients at which the liver surfaces are examined, the diagnosis would not be so easily and definitely dissipated by him. There are many of these patients who growl with dyspeptic symptoms and those due to deficient general health for years without a proper diagnosis having been made showing the characteristic end symptoms of portal cirrhosis. There are not a few gastroenterologists, too, in whom this diagnosis strikes the same unfair conclusion and is practically never made. And added to this gentle and kindly criticism may I add that of the patient with whom the term cirrhosis of the liver strikes an absurd note; with him or her it is better to use the phrase "hardening of the liver."

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An Instrument for the Treatment of Peritonitis and for Intraabdominal Manipulations

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The study of peritonitis and the great need for more efficient methods in the treatment of this devastating disease have led me, within the last two years, to devise an instrument which I have called an abdominal caisson. Experimentation upon the human cadaver and the living dog warrants the presentation of this instrument to the profession for further animal experimentation and for actual use upon the human body. Besides its proposed use in the treatment of peritonitis, this instrument is adapted for any intraabdominal manipulations which demand a ready entrance and egress to the individual cavity over a period of days, or even weeks, such as the treatment of a malignant growth of any of the abdominal organs by radium.

The caisson can be made in any number of sizes. I have made them in but three, and the accompanying photographs and descriptions are of the middle and small sizes. It is shaped like a silk hat without a top, as shown in Fig. 1. It has a brim or flange one inch wide and an upright wall of six inches. The cavity is elliptical in form measuring five inches anteriorly posteriorly and two inches in its widest dimensions. At the juncture of the flange and the upright wall are placed a number of steel eyelets one half inch apart and running entirely around the caisson. An inch and a half from the top is placed a small metal tube which pierces the side wall, one half inch of tubing appearing on the outside surface and one half inch on the inner side. Running entirely around the middle of the wall of the caisson is a rubber beading.

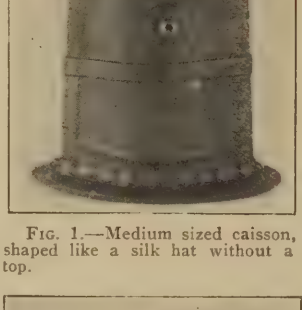

Fig. 1.—Medium sized caisson, shaped like a silk hat without a top.

Fig. 2.—Caisson held in place in abdominal cavity by mattress sutures.

To place this part of the apparatus in position it is necesssary to make a midline incision in the abdomen beginning about three and a half inches above the umbilicus and extending an equal distance below. The caisson, flange first, is then slipped into the abdominal cavity and held in place by nonabsorbable sutures. These sutures are passed, as shown in Figs. 2 and 3, as mattress sutures, beginning about one half inch from the skin edge through the whole thickness of the abdominal wall, taking a slightly oblique course so that they pass through the peritoneum at about one quarter inch from the cut edge, then through the eyelet of the caisson and back again through the peritoneum and abdominal wall leaving one quarter inch of the tissue between the strands. These sutures can be placed so that the skin and abdominal layers will fit snugly to the upper surface of the flange and to the lower caisson wall. The sutures may be tied over very small rubber tubing, as shown in Fig. 4, or without intervening material. This makes a water tight union, but to allow for later shrinkage of the abdominal wall away from the caisson and to protect the cut surfaces from the air, the abdomen is smeared with boric acid ointment and a rubber dam and collar are fitted over the caisson. The collar fits snugly over the lower caisson wall and the dam spreads out over the abdomen and with the help of the ointment it adheres closely. To keep the dam in position and to make

a uniform pressure a metal collar, elliptical in form, is used. This collar in turn is kept in place by braces that extend from another collar that fits under the rubber bead that is part of the caisson wall. The braces connecting the two metal collars are threaded and fitted with thumb nuts so that the distance be-

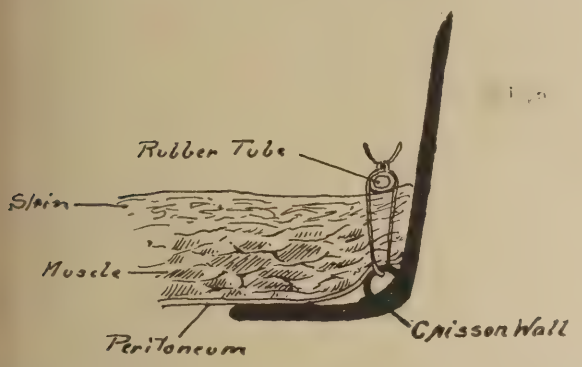

Fig. 3.—Mattress sutures beginning about half an inch from the skin edge, to hold caisson in place.

tween the collars can be easily adjusted to different thicknesses of the abdominal wall. These metal collars can be placed in position by simply removing one pin.

The top or cover is made of solid brass, recessed on its under surface, and contains a thin sheeting of rubber tissue. Piercing the top are three small brass tubes, one half inch of tubing appearing above and one half inch below the cover. In the centre of the cover is a hook. Soft pliable rubber tubes are inserted into the abdominal cavity, one in either kidney fossa and one in the pelvis and then connected with the brass tubes on the under surface of the cover. Another piece of rubber tubing is placed in the pelvis and connected with the brass tube in the side wall.

When the caisson, the rubber dam, metal collars and the cover are in place, the cover is held firmly by two arms that swing from the upper metal collar and fit into a notch at either end of the cover. The arms are threaded and the thumb nuts can be screwed down making the top absolutely tight. Rubber tubes are connected with the three inlet tubes in the top. These tubes in turn are connected with a Carrel irrigating glass tube and this in turn with a single tube that comes from a glass container which holds the irrigating solution. Another rubber tube, attached to the brass tube on the outside wall, leads to a basin beneath the bed, thus forming a complete syphon drainage. A cord has been fastened to the hook in the top and leads upward through two pulleys fastened to framework directly above the bed and the distal end suspends a proper weight for removing the pressure of the caisson from the abdominal wall and at the same time increasing the abdominal cavity.

Fig. 4.—Showing sutures tied over small rubber tubing.

Fig. 5 is a schematic representation of the caisson in position. The abdominal cavity is increased in size corresponding to the size of the caisson used. The ballooned up intestines that have been closely packed together are released from their cramped quarters and corresponding to the amount of distention will partly or more fully fill the caisson. The intraabdominal pressure is lessened and the absorption of the bacteria and toxins proportionately decreased. The interspaces between the loops of intestines are larger and the friction between the inflamed serosa surfaces is lessened and there is better drainage between the loops of the intestines and from the upper abdominal region to the pelvis.

The whole abdominal cavity can be thoroughly

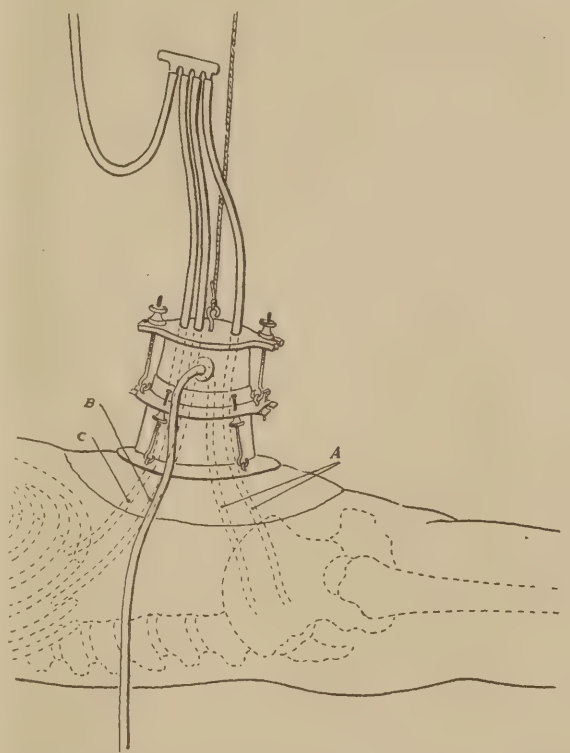

Fig. 5.—Schematic representation of caisson in position. A, leading to Douglas's pouch; B, right kidney fossa; C, left kidney fossa.

washed out at will, and the fluid and infected material carried off again by the syphon drainage tube. If at any time there is cause to believe that the drainage is not complete it is an easy matter to lift up the cover and inspect the abdominal cavity. With the larger sized caisson the surgeon may insert his hand into the abdominal cavity and perform any manipulation desired. With a smaller caisson only instrumental manipulation can be performed, such as replacing the rubber tubes in their proper places by means of sponge holders; or adhesions may be separated or walled off foci broken into and drained. When the infection has been arrested the caisson can be removed and the abdomen closed tightly as in any intraabdominal operation.

This method of treatment is recommended in those advanced cases of acute diffuse peritonitis where the

patient shows a clammy blue skin, rapid thready pulse, low or subnormal temperature, with great abdominal distention and rigid abdominal wall, with a low white count and where the surgeon has been accustomed to say that nothing can be done.

The smallest caisson is a miniature of the larger sizes, its cavity measuring two inches anteriorly posteriorly and one inch in its widest part. The flange is three eighths of an inch wide and the upright wall is two and one half inches high. It is inserted in the same manner, but it does not have the metal supports. The cover is made of hard rubber and fits snugly onto the caisson.

This caisson is devised for use in localized peritonitis, in tuberculosis of the cecum, in fecal fistulæ, in the treatment of malignant intraabdominal growths, etc. It keeps the abdominal cavity open. It does not impinge upon the intestinal walls. It allows direct treatment of the focus of infection.

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Food and Health

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Why not eat right and be well? Much sickness is due to wrong eating. Vigorous health is impossible without proper food. Since selfpreservation is the first law of nature, knowledge of the constituents of a correct dietary should be the first interest in life. It is important to everyone and especially so to the physician whose duty it is to ferret out this knowledge and give it to the world. The energy which the body uses, as well as the body tissues themselves, can be obtained only from the food eaten. Your food must contain all these necessary constituents in sufficient amount. It may be injurious to have a great excess of certain constituents, as for instance proteins, but it is much worse to have a deficiency. It is not so easy to determine what a proper diet is. The fact that vitamines, which have been known only for a few years, are essential to health indicates that our knowledge is not yet complete. We must not only have the proteins, carbohydrates and fats in fair proportion and sufficient amount, but we must also have the minerals and vitamines as well.

PROTEIN

The proteins are tissue builders. I will not enter at length into the discussion of the required amount but will simply say that seventy grams daily is a golden mean and I will tell how to obtain that amount. We may later conclude that fifty grams or less is more nearly ideal, but I wish to be conservative and I do not think that, with the seventy grams daily (if this is a slight excess), the extra work placed thereby upon the kidneys in the elimination of its byproducts would be enough to be injurious to them. I will give a list of ten of our chief sources of protein and show how much we may obtain from a certain quantity of each of them. In the fall of 1915 I showed in an article which appeared in the New York Medical Journal that we obtain unintentionally considerable quantities of protein, that is, that we get it from foods classed not as proteins but as carbohydrates and, to a less extent, as fats. This amounts in an average mixed diet to almost one half of the protein requirement. A good example is bread, which is fifty per cent. carbohydrate, but if six thick slices are eaten in a day, it furnishes about fourteen grams of protein, or one fifth of the day's requirement.

Since, as I have just stated, foods not classed as protein furnish us almost one half of the day's protein requirement, we can easily calculate the amount of protein foods we need, figuring to obtain between thirty-five and forty grams daily from them. Three tenths of a pound of meat satisfies this requirement. If for any reason the patient is taken off a meat diet but milk is allowed, a quart of milk furnishes practically the same amount of protein as three tenths of a pound of meat. From milk and eggs, therefore, it is easy to obtain all the protein necessary without touching meat. Strict vegetarians may not always take enough protein but there is no reason why they should not easily obtain at least as much as the Chittenden standard, that is, fifty grams a day. They generally eat whole wheat bread, beans, peas, figs, dates and nuts. In a heaping tablespoonful of almonds there are five grams of protein. In a medium sized saucer full of figs, dates or raisins there are two and one half grams of protein. A banana weighing three and a half ounces contains one and a half grams protein. When meats are not eaten it must be remembered that helpings of vegetables are naturally much larger. Four heaping tablespoonfuls of peas furnish ten grams of protein. Just as a suggestion I call attention to the fact that two heaping tablespoonfuls of shelled almonds, four heaping tablespoonfuls of peas and two slices of bread half an inch thick give twenty-four grams of protein or one half the Chittenden standard. This could easily be eaten at one meal and as you will see there would be no difficulty in satisfying protein requirement in the three meals if the food of the vegetarian were properly selected, even though he excluded milk, cheese and eggs.

CARBOHYDRATES

The carbohydrates are conveniently divided into two classes, the high content carbohydrates and the low content carbohydrates. The former comprise grain products, such as cereals, breadstuffs, macaroni and potatoes, both sweet and Irish. In addition there is sugar in its various forms, including honey. These concentrated carbohydrates are necessarily

part of one's diet, although they have been greatly abused. From the viewpoint of health, too, much sugar and sweets have been consumed. The increased incidence of diabetes is partly, at least, due to a great increase in the use of sugar. These products have also been too much refined, but of that I shall speak later. Another objection is to their use in the form of desserts. Too great a concentration of foods is a mistake. In a measure it does away with the necessity of chewing and it must be remembered that carbohydrates are digested by saliva. It also permits the ingestion of too much nourishing food and is one of the causes of obesity on one hand, with its train of ills, and gastrointestinal fermentation on the other with its ills. In the average diet of a person of sedentary habits, such as most city dwellers, high content carbohydrates furnish one thousand calories. The low content carbohydrates, including coarse vegetables, fruits and greens, furnish three hundred to four hundred calories. Taken together the two classes of carbohydrates furnish six tenths of the day's food. If one has a tendency to lose weight, the high content carbohydrates with the fats should be used in more than average quantity. If, on the other hand, there is a tendency to gain weight, the low content carbohydrates should be used in larger proportions.

FATS

The fats comprise butter, olive oil, egg yolk, bacon and fat cuts of meat. In addition to furnishing fat soluble vitamines, which recent experiments show are an important factor in health, they supply between two and three tenths of the day's calories. There are countries where fats form a much higher portion of the day's menu, such, for example, as the countries of the Esquimos.

VITAMINES

Since it is now recognized that vitamines are of great importance, we can no longer think of properly choosing our food without taking them into consideration. The investigation of the subject is so recent that our knowledge is far from complete, but we at least know how to play safe. We know that by eating fruits and vegetables, including green leaves, we obtain all the vitamines. We know also that butter and cream contain more fat soluble vitamines than vegetable oils. We know that fat soluble vitamine A is essential to growth and for the full grown it is essential to health. We know that it has the power to increase the resistance against infectious diseases. We know that vitamines B and C are also essential to health, that without vitamine C scurvy develops and without vitamine B poor appetite, mild symptoms of poor health and eventually a disease of the nervous system called beriberi. Articles which contain all the vitamines are tomatoes, fresh cabbage, carrots, cauliflower, lettuce, spinach and whole milk —though the vitamine C in milk is rather easily destroyed by heating and is somewhat dependent upon the greens in the diet of the cow and therefore is less in late winter and spring than in other seasons. Oranges and tomatoes have perhaps the best reputation at present for the vitamine C content. Vitamines have a marked influence on the teeth and gums in addition to the effects already mentioned.

MINERALS

While it has been customary to state that minerals are an important part of the diet there is little of a definite nature in medical literature on this subject. The work of Sherman on calcium indicates that the diet of the American people is more likely to be lacking in lime than in protein. The body of a man weighing 154 pounds contains approximately four and a half pounds of calcium oxide (lime). The day's requirement of lime is fifteen grains. I have shown in the accompanying chart the important sources of lime. It seems apparent that without milk or cheese in one's dietary, it is not easy to obtain enough lime. The only possibility is to select fruits and green vegetables and use generous helpings of them. It is quite easy, however, to obtain the day's supply when cheese and milk are included in the menu. Two and a half glasses of milk furnish the entire requirement for the day. One glass, therefore, furnishes two fifths of the requirement. With one glass of milk and a good helping of cheese daily there would not be the slightest danger of being undernourished in calcium. The bones and teeth, much alike in composition, are about eighty-five per cent. calcium phosphate and ten to twelve per cent. calcium carbonate. Is it not suggestive, since in this country we are not taking our proper allowance of lime, that the almost universal presence of cavities in the teeth may be due to this fact? We know of races in the past who did not use any special measures for preserving the teeth, such as we use today, who were practically free from tooth troubles. It may not be so much the sugars we eat, which have often been blamed, but the lime, which we do not eat, that is the cause of this abnormal condition.

IMPORTANT SOURCES OF PROTEIN

DAILY PROTEIN REQUIREMENT IS 70 GRAMS = 2½ OZ. = 287 CALORIES = ½ GRAM OR 2 CALORIES A POUND OF BODY WEIGHT.

	Grams
Meat, 5 oz.	= 34.5
Milk, 1 quart	= 33.0
Cheese, cream, 1 oz.	= 8.0
Cheese, American, 1 oz.	= 8.0
Bread, whole wheat, 6 oz.	= 17.4
Eggs, 2	= 13.0
Baked beans, 2.6 oz.	= 5.4
Peas, 2 tablespoonfuls	= 5.0
Cereal, moist, 1 helping	= 3.0
Banana, 3½ oz.	= 1.5
Orange, 4 oz.	= 1.0

IMPORTANT SOURCES OF LIME

DAILY REQUIREMENTS 15 GRAINS CaO.

	Grains	Requirement
Milk, 10 oz.	= 7.3	= 1/2
Cheese, 1 oz.	= 5.7	= 1/2.5
Mustard greens, 2 oz.	= 6.0	= 1/2.5
Turnip tops, 2 oz.	= 4.2	= 1/4
Molasses, 2 oz.	= 2.5	= 1/6
Bread, Boston brown, 3 oz.	= 2.37	= 1/7
Oranges, 7 oz.	= 1.9	= 1/8
String beans, 4 oz.	= 1.2	= 1/13
Spinach, 2 oz.	= 0.8	= 1/19
Bread, whole wheat, 6 oz.	= 0.79	= 1/19

IMPORTANT SOURCES OF IRON

DAILY REQUIREMENTS 0.2 GRAINS

	Grains	Requirement
Romaine, 2 oz.	= 0.1	= 1/2
Eggs, 2	= 0.048	= 1/4
Bread, graham, 6 oz.	= 0.06	= 1/3
Bread, whole wheat, 6 oz.	= 0.042	= 1/5
Beef, 6 oz.	= 0.055	= 1/4
Mustard greens, 3 oz.	= 0.063	= 1/3
Spinach, 3 oz.	= 0.045	= 1/5
Chard, 3 oz.	= 0.03	= 1/6
Dandelion greens, 3 oz.	= 0.03	= 1/6
Prunes, 2 oz.	= 0.026	= 1/8
Raisins, 1 oz.	= 0.009	= 1/20

A BALANCED MENU

BREAKFAST

	Calcium (CaO) grains	Phosphorus (P_2O_5) grains	Iron grains	Protein grams	Fats grams	Carbohydrates	Calories	Vitamines
Orange	2.0	6.0	0.006	1.		15.	75	BC
Oatmeal	0.4	0.5	0.016	4.3	3.00	30.	100	AB
Milk, 2 oz.	1.5	1.9	0.002	1.87	2.87	3.	40	ABC
Cream, 40%, 1 oz.	0.5		0.001	1.	12.00	1.	120	A
Bread, 1 slice whole wheat	0.13	1.2	0.006	2.3	0.50	13.	70	AB
Butter, 1 ball, ⅓ oz.	0.03		0.0003		8.50		80	A
Café au lait:								
Coffee, 4 oz.,								
Milk, 4 oz.	3.0	4.0	0.004	3.75	4.75	6.	80	ABC
Total	7.56	13.6	0.0353	4.22	31.62	68.	560	

LUNCHEON

	Calcium (CaO) grains	Phosphorus (P_2O_5) grains	Iron grains	Protein grams	Fats grams	Carbohydrates	Calories	Vitamines
Eggs, 2	1.60	5.0	0.0490	13.00	5.000		150	AB
Bread, 2 slices whole wheat	.26	2.4	0.0120	4.60	1.000	26.0	140	AB
Butter, 2 balls	.06		0.0006		17.000		160	A
Potato, baked	.35	2.5	0.0220	2.20	.125	22.2	100	ABC
Salad:								
Lettuce, 2 oz.	.52		0.0060	0.57	.125	1.4	10	ABC
Pineapple, 1 slice	.20		0.0040	0.20	.300	19.3	80	BC
Cream cheese, 1 oz.	5.70	1.8	0.0057	8.00	10.000	1.0	130	AB
Mayonnaise, 1 tablespoonful				.35	11.000	.5	100	
Café au lait:								
Coffee, 4 oz.								
Milk, 4 oz.	3.00	4.0	0.0040	3.75	4.750	6.0	80	ABC
Total	11.69	15.7	0.1033	32.67	49.300	76.4	950	

DINNER

	Calcium (CaO) grains	Phosphorus (P_2O_5) grains	Iron grains	Protein grams	Fats grams	Carbohydrates grams	Calories	Vitamines
Beef, roast, 2 slices 5x3x¼ inches	0.180	4.500	.0860	23.00	22.00		300	B
Beans, string, 1 cup	1.100	0.283	.0160	2.40	0.30	5.8	40	ABC
Carrots, 2 tablespoonfuls	1.000	0.500	.0070	1.00	0.40	9.3	40	ABC
Salad:								
Romaine, 2 oz.	0.550		.1000				10	ABC
Pineapple, 1 slice, canned	0.200	0.675	.0035	0.21		19.65	80	BC
Banana, ½	0.093	0.700	.0044	0.75	0.25	11.0	50	ABC
Apple, ½	0.120	0.375	.0039	0.25	0.25	8.5	35	ABC
Grapes, white, 12	0.080	5.400	.0009				60	BC
Mayonnaise, 1 tablespoonful				0.35	11.00	0.5	100	
Pineapple juice 2 tablespoonfuls								
Apple, baked, 6 oz., and sugar, 1 teaspoonful	0.260	0.650	.0080	0.50	0.50	17.0	100	ABC
Total	3.583	13.083	.2297	28.46	34.70	71.75	815	

PHOSPHORUS

The amount of phosphorus in the body is more than three pounds. Thirty grains of phosphorus pentoxide is the approximate daily requirement. Since phosphorus is commonly associated with protein food, and since the American diet is high in protein, there is not much danger of our getting too little phosphorus. It is present in meat and eggs as well as milk.

IRON

The amount of iron found in the human body is, on an average, one tenth of an ounce; it is estimated that two tenths of a grain covers the average daily requirement. The American dietary is not likely to be low in iron but there are many cases in which this does obtain. It is present in meat but it is not present to any considerable extent in milk or cheese. White sugar and white flour have had most of the iron extracted. This makes it possible for a person to eat a diet of white bread, cake, pastry with milk and cheese, not much meat, plenty of fat and be overnourished, as far as adipose tissue is concerned, but anemic. There is a great difference in the amount of iron contained in various articles of food. Generally speaking the green leaves contain the largest amounts but romaine is the richest of all. From two ounces of romaine one can obtain one half of the day's requirement. A good helping of spinach furnishes one fourth of the day's requirement. A helping of oatmeal furnishes one twelfth of the day's requirement. Three slices of whole wheat bread furnish one eleventh of the day's requirement. It would take six quarts of milk to furnish the requirement of iron if milk were the only food.

FOOD AND HEALTH

The accompanying menu for a day will serve to illustrate how the various requisites of one's dietary may be obtained. It was drawn particularly to show how to obtain the necessary proteins and minerals and was presented before the New York Stomatological Society. It furnishes 2,325 calories which is quite sufficient for the average person living in the city. Seventy-five grams of protein are included. This is a conservative up to date estimate for protein.

Over twenty-two grains of lime are furnished in this menu. This includes a helping of cream cheese. The latter could be omitted and still leave an abundance of lime. It will be noticed that it is obtained largely from ten ounces of milk. The chart which shows the important sources of lime would indicate the possibility of obtaining lime from greens. Mustard greens, if five ounces were taken in a day, would furnish the entire requirement. Five ounces of turnip tops would furnish ten grains, or two thirds of the requirement. Thus, it may be seen that by consulting a list showing the calcium content of articles of food the requirement can be obtained from eating regularly generous helpings of greens.

The amount of iron furnished in this day's menu is 0.36 grains, more than fifty-two per cent. in excess of requirement. By consulting the table giving important sources of iron the value of greens for this purpose is seen. Three ounces of mustard greens furnish one third of the day's requirement. Six ounces would be a generous helping of mustard greens and this would supply two thirds of the requirement. From the bread, meat, eggs, potato and oatmeal in this menu 0.0180 grains are obtained. The eggs and beef furnish 0.13 grains or two thirds of this. From the tables it can be readily seen that it is entirely unnecessary, if one has the information on the subject, to permit the diet to be inadequate in any of the essentials discussed. It is particularly important to have the proteins, calcium, phosphorus and vitamines in order to insure the proper development of the teeth and to prevent caries. As some of the experiments have indicated, the teeth are an excellent indication in many cases of the correctness of one's diet, as they often show its inadequacy when there are practically no other symptoms of disease present.

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Hereditary Immunity to Rhus Dermatitis

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Considerable emphasis has recently been laid upon what may be acquired immunity to Rhus dermatitis but very little attention has been given to natural immunity to this disease. Animal experiments have not been successful in Rhus dermatitis since the skin of most of them is apparently immune to the action of Rhus poison. So for the present at least, analysis of data is necessarily confined to human statistics.

As I have stated elsewhere (1) it is doubtful if absolute natural immunity exists toward this disease. Persons are frequently found who are immune to the poison when it is applied in the same concentration and condition as it exists in the sap of the plant, but when applied in a more concentrated form these persons are affected by it. Von Adeling, in 1912, found that the concentrated alcoholic extract of poison oak (Rhus diversiloba T. and G.) affected every immune person to whom it had been applied. Similar results were obtained by Warren in 1909, with poison ivy (Rhus toxicodendron L.). Brown (1922), in experimenting on nine individuals with an alcoholic poison ivy extract of unknown strength, found three immune.

Spain (1922), in experimenting on eighty individuals, all but one of whom were over eight years old, with an ethyl alcoholic poison ivy extract of unknown strength, found fifty-two or sixty-five per cent. susceptible. Bibb, in 1914 and 1915, however, in experimenting with the sap of Rhus toxicodendron, found a person on whom it had no deleterious effect.

Earlier immune results with the sap of Rhus toxicodendron were noted by Kalm, in 1748, by Van Mons, in 1797, and Blackwood in 1880. I have observed similar cases with Rhus diversiloba. The sap of both the poison ivy and the poison oak has frequently been observed to have been transmitted from the hands and clothing of immune gardeners and those who have been working with the plants to others who were susceptible to it (Planchon, 1887; Busey, 1873; White, 1873; Lindley, 1908). Similar examples of relative immunity are found in experiments with bacteria and toxins on animals; for instance, rats are highly immune to diphtheria toxin, and readily withstand the effects of an amount equaling one thousand lethal doses for a guineapig, but still larger doses may prove fatal; hedgehogs possess complete or almost complete immunity for the amount of snake venom deposited in an ordinary strike, but if the venoms of several snakes are collected and injected at one time, death will result.

Although it is doubtful if absolute immunity does occur yet it is thought that natural relative immunity exists toward this disease because of the comparatively small number of persons highly susceptible to skin poisoning from Rhus poison. Among 28,756 university students, 1,602, or 5.57 per cent., were treated for Rhus dermatitis. Of these 855, or 2.97 per cent., were males, and 747, or 2.59 per cent., were females (1). That is, approximately one person in eighteen is highly susceptible and about the same number of males as females are poisoned.

From the cases which I have studied a definite and marked susceptibility to Rhus dermatitis exists in certain families and family generations. This family tendency is usually more pronounced when there is a history of dermatitis in the paternal and maternal lines.

It is not unnatural for hereditary tendencies to skin diseases to occur in man. Undeniable occurrence of skin conditions is seen in benign tumors and especially various cutaneous growths that are essentially benign neoplasms. Several records of dermatological heredity of these have been collected by Meirowsky and Bruck (2). Hereditary telangiectasis is also well known. The literature on this was reviewed by Goldstein (3). Multiple benign cystic epithelioma is one of the growths that has a distinctly familial distribution and these growths (4) which usually resemble carcinoma histologically sometimes become malignant.

To illustrate the hereditary character of these cutaneous growths the following case reported by Heidingsfeld (5) may be cited, of a man sixty-five years of age, with four children all of whom, himself included, exhibited a growth on the nose. His maternal uncle and aunt had similar growths, his mother died at thirty without having any growths, and there had been no cases on the paternal side.

Assuming that hereditary immunity to Rhus der-

matitis exists, it may occur in accordance with the Mendelian principles, for the following reasons:

1. The principles of inheritance worked out by Mendel with garden peas have so far been found to hold good for all multicellular living things, whether plants or animals.

2. Mendelian principles do appear in human inheritance. For example, in hereditary hemophilia and in color blindness perfect illustrations are found of an inherited sexlinked recessive character. Eugene Fischer (6) reports that in the crossing of Europeans with Hottentots, transmission of characters occurs in accordance with Mendelian expectations. Another illustration of human heredity conforming to the Mendelian principles is seen in the separation of human red blood corpuscles into four groups in respect to isoagglutination (7). Fischer says that "all known normal and pathological characteristics that are transmitted by heredity follow the Mendelian laws."

It is probable, therefore, that resistance to Rhus dermatitis may obey the laws of Mendelian inheritance, although no satisfactory proof has been shown thus far. In Mendelian inheritance three groups of characters occur, namely, recessive, dominant, and heterozygous (i. e., mixed dominant and recessive). Accordingly there are six possible different combinations of these groups, in breeding: 1, dominant and dominant; 2, recessive and recessive; 3, dominant and recessive; 4, heterozygous and dominant; 5, heterozygous and heterozygous, and 6, heterozygous and recessive.

As was stated above, among 28,756 university students 1,602, or 5.57 per cent., were treated for Rhus dermatitis. From these results one would expect that if resistance to Rhus dermatitis were inherited it would be a dominant character, as approximately only one person in eighteen is highly susceptible and, conversely, susceptibility to the disease would be recessive. With this idea in mind the dominant (relative immunity) and the recessive (high susceptibility) can be applied to Mendelian matings.

Accordingly, in a dominant and dominant mating (1) there are no cases of high susceptibility to Rhus dermatitis, nor would any succeeding generation of this order have high susceptibility. In a recessive to recessive breeding (2) all the children would be highly susceptible. When a dominant and recessive cross (3) that is, one parent but not both highly susceptible to Rhus dermatitis, the children would not be highly susceptible to Rhus dermatitis. If one parent is highly susceptible (recessive) and the other parent is heterozygous in this regard (6) then the first generation would show some cases of high susceptibility (pure recessives) and some heterozygous offsprings which would not have high susceptibility themselves, but all of whom might transmit the tendency.

It is also perfectly possible for heterozygous and dominant resistant individuals (4) to mate with one another for several generations without recessive (highly susceptible) individuals appearing; but, when heterozygous offspring of such unions mate (5) highly susceptible individuals might result. It is thus possible for a heterozygous human being to transmit high susceptibility unrevealed through an indefinite number of generations, provided he or she failed to mate with recessive or other heterozygotes, but when highly susceptibility (recessive) did appear it would be as definitely inherited as if each ancestor for several generations had been highly susceptible to Rhus dermatitis. Failure to appreciate the manner in which inherited characters may be transmitted may cause confusion.

All of the possible lines of inheritance involving Mendelian principles fit in well with what is known of the occurrence of actual cases of Rhus dermatitis. It is now apparent how there may be families all the members of which are highly susceptible to Rhus dermatitis (recessive recessive cross) how other families may be highly immune (dominant dominant cross), how when one parent is highly susceptible (recessive dominant cross), the children may not be susceptible, how when one parent is highly susceptible (recessive heterozygous cross) some of the children may be highly susceptible, how when both parents are immune (dominant heterozygous cross) the children are immune but the grandchildren may not be immune, how when both parents are immune (heterozygous heterozygous cross) some of the children may be highly susceptible.

SUMMARY

1. But little attention has been heretofore given to the possibility of hereditary natural immunity to Rhus dermatitis.

2. Animal experiments have yielded but little data so far in this regard.

3. Absolute immunity to the concentrated poison has never been proved to exist.

4. Relative immunity exists in which approximately one person in eighteen is highly susceptible.

5. This high susceptibility seems to exist in certain families and family generations.

6. Hereditary tendencies to skin diseases occur in men, e. g., benign tumors, telangiectasis, and cystic epithelioma.

7. If hereditary immunity to Rhus dermatitis exists it may be in accordance with Mendelian law for:

a. Mendel's law has been found to apply to all plant and animal inheritance so far.

b. Mendelian inheritance does appear in human inheritance, e. g., in hemophilia, in color blindness, in crossing of Europeans and Hottentots, and in the classification of red blood corpuscles.

8. In Mendelian inheritance three characters occur, recessive dominant and heterozygous. There are, therefore, six possible different matings, dominant and dominant, recessive and recessive, dominant and recessive, heterozygous and dominant, heterozygous and heterozygous, and heterozygous and recessive.

9. Resistance to Rhus dermatitis may be a dominant character as apparently only one person in eighteen is highly susceptible and conversely, high susceptibility may be a recessive character.

10. Mendelian inheritance involving these classifications conforms with and may explain the appearance of high susceptibility in some families, immunity in other families, varied susceptibility among individuals of one generation, immunity in one generation and some highly susceptible in the next.

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Ivy Poisoning

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Now that summer is here and woods and fields once more tempt the town dweller to leave the noise of factories and the reek of half burned gasoline for the purer air and the quiet of a day in the open, there will come the inevitable seasonal increase of ivy poisoning. Whether in city or country practice, the physician expects this, for poison ivy grows as luxuriantly in the city park as over the old stone wall, and ignorance of botany is not confined to city dwellers. In Northeastern America there are two plants which stand out above all others in the importance of their irritant action on the skin, for although there are many which have been known, in isolated instances, to produce dermatitis, these others are harmless to the great majority of the population.

TWO POISONOUS PLANTS

Our two poisonous plants are the poison ivy, Rhus radicans or Rhus toxicodendron—for it appears in botanies under both names—and poison sumac, Rhus venenata. Rhus radicans is closely related to, if not identical with, the Rhus diversiloba of the Pacific slope; but whereas the latter often forms thickets six feet high or more, rising from the ground without support, I have never seen the former take on this manner of growth. Poison ivy may trail over the ground and carpet a considerable area, but under such conditions seldom rises more than a few inches. When, however, it finds support—such as a wall, a fence post, or a tree—it straightway climbs, and once it has reached the freedom of the air it throws out tough woody stalks and branches an inch or more in diameter. I have seen it rising three or four feet from the top of a wall and throwing out free growing lateral branches five or six feet long from the trunk of an old tree. The plant is easy to recognize, once the distinctive features have been learned, but a full description would be out of place here. It may be worth noting, however, that its leaflets are always in groups of three—the harmless woodbine has five leaflets—and the leaflets are rather thick, shiny and usually entire, though occasionally a leaflet may show the formation of an imperfect lobe.

The poison sumac, though closely related, is an entirely different plant and rather hard to recognize. Like all the other sumacs it has a compound leaf of many leaflets, but in the nonpoisonous kinds the midrib is only slightly curved and the leaflets grow out almost flat from the midrib; while in the poison sumac the midrib is decidedly curved and the leaflets do not grow out flat from each side of the rib but rise as they grow out, forming a sort of trough. The poison sumac is fond of swamps and seldom or never grows on dry soil. Its fruit is borne in loose clusters: any sumac bearing a dense conical fruit cluster—a barb, as it is commonly called—is not poisonous. It is said that the poisonous principle of the ivy and the sumac are not identical, but the symptoms they produce are practically the same. Poisoning by sumac is comparatively rare, as the plants are seldom encountered and they do not tempt the wayfarer from the beaten path except in the early fall, when the leaves surpass all others in the beauty of their pastel coloring.

The toxic principle is found only in the sap, but sap, fresh or dry, is found in or on practically all parts of the plant and there is no distinction to be made, as regards poisonous properties, between root, stem, and leaf. Its distribution, chemical and physical properties have been very carefully studied by McNair, whose monograph (1) should be read by every one interested in the subject.

MODE OF INFECTION

The most common mode of infection is by direct contact between the skin and some part of the plant. An injury to the skin does not seem to be essential but apparently there must be some injury to the plant so that sap, either fresh or dry, may be on the surface. Casual brushing against an uninjured leaf seems to be harmless, while touching a stone or tree from which the vine has been torn is very dangerous, as the surface is covered with broken aerial rootlets. There are authentic records and experimental proof of poisoning by smoke, the poison being carried on particles of soot, but not as vapor. In a large number of cases the contagion is mediate, that is, the poison is carried from plant to person by a third object. The commonest example of this is the infection of the penis by the hand of the patient, and so frequent is this that a vesicular dermatitis of the hands accompanied by a similar dermatitis of the penis is almost certainly caused by ivy poisoning, even though evidence of exposure may not be ob-

tainable. The next most common carrier is some article of clothing, a good example of which occurred in my own person. I had spent an afternoon one fall tearing ivy from some old apple trees, not touching the vines with my hands but using an axe, both for cutting and as a hook. Climbing into the trees, it was often necessary to brace myself with arm and elbow to get a good support. A week or ten days later both arms were in full eruption, swollen, red, and weeping. A month later I put on the same flannel shirt, which meantime had been laundered, and wore it for a day but did not go near any ivy or near any object where ivy had grown. By evening the skin had begun to itch, and the eruption returned as bad as ever, and in the same location. The shirt was then burned and I have had no similar attack since.

IMMUNITY

As far as we know, there is no absolute immunity to ivy poisoning though the susceptibility varies enormously from person to person, and in the individual from time to time. Even people supposed to be refractory will succumb when the concentrated poison is placed upon the skin. A patient of mine often boasted of her immunity, and once in a spirit of bravado rubbed the leaves over her face and hands as she had done with safety many times before—but this time it was different, and she stayed at home for a week, though she had to forego the best dance of the season. We do not know the cause of these variations, but I believe there is evidence that a person who has once been badly poisoned is thereafter more susceptible than before.

SYMPTOMS

The following description of the course and symptoms of an attack of ivy poisoning has reference to those produced by Rhus radicans. I believe those produced by Rhus diversiloba and by Rhus venenata are similar, if not identical, but of this I have no personal knowledge. There is always an interval between the time of contact of the poison with the skin and the first appearance of symptoms, and this may vary from a few hours to nine days. The length of this interval appears to be dependent in part on the amount of poison deposited on the skin, in part on the susceptibility of the patient, in part, perhaps, on the condition of the skin—though this last is uncertain. It is generally believed that the skin is more susceptible when in a violent perspiration than when dry, but I know of no definite evidence on this point. The first symptom is a moderate itching or burning sensation on the part affected, soon followed by an eruption of small vesicles. At first there is no redness and no perceptible swelling. From this point the course of the attack varies enormously in different cases, and no one description will answer for all. The simplest way is to describe two classes, but it must be understood that this is for convenience only and that the classes shade into each other by insensible gradations.

First, there are the abortive cases, characterized by the eruption of a few tiny vesicles or papulovesicles on some part of the body, usually a hand. There is no diffuse swelling, no general redness, the discomfort is not severe and the discharge when the vesicles rupture is insignificant. In a few days the attack is over, and the diagnosis can hardly be made except with a definite history of exposure.

Very different are the severe cases. They may begin in the same way, but the eruption spreads with the appearance of more and more vesicles, both beyond and within the affected area. The vesicles are so close set as to touch each other, leaving no areas of normal skin between, but the individual vesicles, as a rule, remain small. At the same time, the skin becomes red and swollen, the swelling being deep and boggy, though the skin does not pit on pressure as it does in the edema of nephritis. Although the swelling may be very great, the skin never acquires the leathery quality so characteristic of chronic facial eczema. The swelling is not confined to the area covered by vesicles, but may extend an inch or two beyond it. The color is usually pink and lacks both the brilliant red and the sharp margin of erysipelas. It may be several days, even a week, after the first vesicle has appeared before the disease acquires this character, while in other cases the development may take hardly more than a day. As the vesicles increase, some of them rupture and soon the skin is bathed with a constant and profuse exudation of serum, while the discomfort becomes almost intolerable. This discomfort is not the intense itching of scabies—excoriations are not a feature of the disease—but rather a combination of itching, burning, heat, weight, increased sensitiveness to touch, and interference with motion. With these local symptoms, there is also a fever, which may rise to 104° F., and the prostration which goes with it. The duration of these severe symptoms is variable, but ordinarily they recede in a week or two after reaching their climax—the swelling and the redness subsiding, the vesicles disappearing, and finally the superficial epidermis peeling off in large flakes or sheets.

There is some evidence that a severe attack confers a temporary immunity, Lyon (2) reporting that although he was very susceptible he never had a second attack the same year. This is contrary to my own experience, as recorded above, and the question needs further study. It is popularly believed that the eruption may recur from time to time, even for many years, without fresh exposure, but it is probable that such cases are to be explained either by unrecognized contact with the vine itself or by contact with some article which has been contaminated by the poison—perhaps a pair of shoes, gloves, or a walking stick.

TREATMENT

Innumerable are the methods of treatment which have been tried. Some are aimed at reducing the susceptibility by administering drugs, of which dulcamara has been one of the most popular. Others are local applications, intended to reduce the inflammation—such are the familiar calamine lotion and the equally familiar Lassar's paste—but for this purpose all alike are vain. Indeed, fatty preparations are worse than vain, for they dissolve the poison and instead of removing it they spread it over previously healthy skin. The first real progress was made by Pfaff (3), who isolated a substance which had all the toxic properties of the whole plant, soluble in fats, in ether, in alcohol and in gasoline, and which could

be removed by scrubbing with soap and hot water. This substance he called toxicodendrol, and it is probably identical with the lobinol later isolated by McNair. The method of treatment he advised is simplicity itself, and has the advantage of cheapness and almost universal availability. It is simply repeated washing with running warm water, using plenty of soap and a scrubbing brush, gauze, or absorbent cotton, depending on the toughness of the skin attacked. If running water is not available, the water in the basin must be changed repeatedly and at frequent intervals. Similarly, the scrubbing brush must be washed repeatedly with soap and warm water in the course of the treatment, and the gauze or cotton replaced frequently with fresh pieces. Unless these precautions are followed, some of the poison will inevitably remain on the skin, and in a susceptible person even a trace is enough to produce a dermatitis. If this treatment is followed within a few hours of exposure, even a susceptible person will escape, and it is capable of aborting the attack in the vast majority of cases, even when the vesicles have appeared—but of course the earlier it is used, the better. It has little effect in established severe cases.

In 1906, Acree and Syme (4), writing on the composition of texicodendrol, found that early and repeated use of one per cent. or two per cent. solution of potassium permanganate, especially if hot and containing a little sulphuric acid, was very effective in checking and aborting an attack. The drug acts by destroying the poison by oxidation. I have not tried this preparation myself, and would expect to find it useful only in the class of cases that are successfully treated with soap and water.

The next step in advance was the use of a tincture prepared from the plant, as advocated by Schamberg (5). This method of immunization was further elaborated by Strickler (6), who added the intramuscular injection of a Rhus antigen. The method he advised is as follows: For immunization he gives four intramuscular injections of 0.3 to 0.5 c. c. each of Rhus antigen at intervals of three or four days. After the last dose, the patient takes from five to ten drops of tincture of Rhus, well diluted, three times a day, after eating, for a period of one month. In treating an attack, he injects from .3 c. c. to .5 c. c. on two successive days, and follows this, if necessary, with two or three more injections of .3 c. c. to .7 c. c., at intervals of two to three days. The results to be obtained by this method are nothing less than brilliant, and are well illustrated by the following cases:

Case I.—A young woman, R. G., who had had an attack of ivy poisoning in 1920, came to the New York Skin and Cancer Hospital on July 2, 1923. She had been exposed to ivy on June 24th, and on the following day noticed blisters on the wrists, which gradually spread till a large part of the surface was involved. Her temperature on admission was 101°. She was given five minims of tincture of rhus three times a day, and received by injection 0.3 c. c. of the antigen, diluted in one c. c. of salt solution, July 3rd; 0.45 c. c. on July 4th; 0.2 c. c. on July 7th, and 0.4 c. c. on July 11th, when she was discharged cured. The eruption began to improve after the first dose.

Case II.—Another young woman, S. K., came to the hospital the same day. Her eruption had been present about two weeks, having developed five days after exposure in Van Cortlandt Park. Her temperature was 101.6°. The left hip and thigh was one mass of close set vesicles, many of which had ruptured, producing a copious excretion of serum, which actually dripped on to the floor as she stood up for examination in the dispensary. There were other vesicles scattered over the left foot and arm and over the back. She received five drops of the tincture of rhus three times a day, and injections of the antigen on July 2d, 3rd, and 5th. No new vesicles appeared after the third dose, and recovery was rapid and uneventful.

Case III.—Mr. J. L., forty-one years old, came to my office on July 16, 1923. He had been in the country over July 4th, and about July 9th noticed an itching of the buttocks. This gradually increased, and by July 13th there was a good deal of swelling. When I first saw him, the projection of the buttocks was hard, tense, brawny, dull red in color, and studded with tiny vesicles. The condition suggested an acute inflammatory swelling, but although there was much burning and itching there was neither pain nor great tenderness. On the abdomen there were irregular groups of vesicles on an erythematous base, the erythema being more extensive than the vesiculation. There was a group of vesicles on the ulnar border of the left wrist, and two vesicles on the glans penis. Washing with soap and warm water and dressing with a saturated solution of acetate of lead in seventy per cent. alcohol gave little or no relief, and on July 18th he received 0.5 c. c. rhus toxicodendron antigen in the left buttock. There was moderate pain from the injection, lasting till evening. The swelling began to subside notably about nine hours after the injection, and next day the oozing of serum had ceased and the whole eruption was resolving. He received a second injection of 0.5 c. c. of rhus antigen, and did not report again.

The treatment may therefore be summarized as follows: First, and most important, let every one learn what these two plants look like and avoid them. Second, wash thoroughly, as directed above, after every exposure, and also on the first appearance of the eruption, taking, in the latter case, three drops of tincture of rhus three times a day. This will be enough for the majority of cases, but in the severe types, whenever seen, and in the milder types which are growing worse in spite of washing and the tincture, use both the antigen and the tincture.

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Phenolphthalein Eruption

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Since Abramowitz demonstrated that some of the cases heretofore diagnosed as erythema perstans, toxic erythema or recurrent erythema multiforme, were in fact produced by the ingestion of phenolphthalein, dermatologists have seen and recorded several additional cases. However, the reported cases are still few in number and since, with few exceptions, these reports have appeared in dermatological journals which are not often read by the general practitioner, this report of a case together with a brief review of the literature is offered.

REPORT OF A CASE

Case.—The patient, a young woman, eighteen years of age, was first seen on September 14, 1923. She complained that for the past few months she had had recurrent attacks of an eruption which was first limited to the neck but in subsequent attacks had extended to the body. The eruption was accompanied by itching and burning but there were no constitutional symptoms either before or during the attacks. The eruption would usually disappear in a week or ten days leaving pigmented areas in which the eruption always recurred. The patient was accustomed to taking liquorice powders as a laxative but occasionally she took the ex-lax instead. She had not noticed any relation between occurrence of the eruption and the taking of the ex-lax tablets. The general health of the patient was excellent except for constipation and painful menstrual periods. Her past history was negative except that at the age of eight she had had pneumonia followed by empyema.

The physical examination disclosed numerous slightly grouped, macular plaques, scattered over the trunk, being most numerous on the lateral surfaces. The neck, face and extremities and the mucous membranes were not involved. The lesions varied in size from one half inch to several inches in diameter. The color ranged from purple to bright red. The larger lesions were purple at the centre, changing to various shades of red at the periphery where in some there was a distinct areola. The larger plaques were slightly raised above the level of the skin. Some of the lesions had become confluent. There was some desquamation in the resolving lesions but the more acute lesions were smooth. On the right side there was a large depressed scar, the result of an operation for empyema, the anterior portion of which was included in one of the plaques. The scar tissue showed the same amount of inflammatory reaction as the adjacent skin.

The laboratory findings were as follows: Urine: neutral, specific gravity 1020, slight trace of albumin, otherwise negative. Blood: red blood cells, 4,410,000; white blood cells, 5,000; hemoglobin 80 per cent. (Dare); Wassermann negative. Blood chemistry: three hours after meal—sugar 104, urea 33.

The patient was instructed to take calomel, two grains, in fractional doses, with magnesium sulphate on the following morning and a bland application was given for local use. When seen three days later the subjective symptoms had disappeared and the resolution of the eruption was well under way.

On September 24th, ten days after her first visit, the character of the plaques had changed a great deal, most of the inflammatory appearance having disappeared, leaving pigmented areas. At this time one grain of phenolphthalein was given and the patient was advised to return if any change was noticed. The next morning she returned, complaining of severe itching and burning of the skin. The pigmented areas presented the same polychromatic inflammatory plaques that were present at the time of the first observation. New lesions had appeared but they were smaller and of a brighter red than the larger and older lesions. The patient was instructed to avoid proprietary remedies as many contain phenolphthalein, and general measures for constipation were prescribed. On December 13th the pigmented plaques were still present but they were gradually disappearing. At this time cutaneous tests for phenolphthalein were negative. The skin was scratched and powdered phenolphthalein with a drop of water was rubbed on the abrasions, and the patient was directed to take two grains of antipyrin three times a day for seven days. At the end of this period there was no change in the character of the lesions.

Since the patient stopped taking ex-lax tablets or phenolphthalein in any other form, there has been no recurrence of the eruption.

REVIEW OF THE LITERATURE

Cases of phenolphthalein eruptions probably occur more frequently than is generally supposed as many are probably unrecognized. Judging from the number of cases presented before the various dermatological societies, however, the condition may be considered as being comparatively rare.

In 1918, Abramowitz (1) first showed that phenolphthalein may produce an eruption. He described five cases of persistent erythema multiforme associated with pigmentation but in only one of these was he able to prove that phenolphthalein was the etiological factor. Several weeks later this case was shown by Dr. Howard Fox (4) before the Manhattan Dermatological Society, at which time the patient presented several pigmented rounded macules, varying in size from that of a bean to that of a silver dollar. The source of the phenolphthalein in this case was ex-lax which the patient was in the habit of taking as a laxative.

Ayers (2) reported a case in which the lesions were limited to the face, in contrast to the majority of the reported cases in which the trunk was the principal site. Ayer's article includes an excellent discussion of the pharmacology of phenolphthalein.

In 1922, Wise and Abramowitz (6) published a

complete review of previously reported cases with four additional cases of their own. They also cited three cases which were presented by MacKee and Wise before the Manhattan Dermatological Society and the New York Academy of Medicine in 1916 and 1917 under such titles as Erythema Multiforme

Fig. 1.—Scattered, somewhat grouped, polychromatic macules and plaques, produced by the ingestion of phenolphthalein. Note the empyema scar part of which is included in a plaque.

Perstans, Melanoderma from Recurrent Erythema Multiforme, and Toxic Erythema, and express the opinion that these cases were in reality cases of phenolphthalein eruption, for although at the time of the presentation the etiological factor was unknown and in only one was there any definite history of the ingestion of phenolphthalein with accompanying exacerbation of the eruption, the clinical picture indicated that they belonged in this group. These authors are of the opinion that antipyrin may produce an eruption identical with that caused by phenolphthalein and they also mention the close similarity between these and the fixed arsphenamine eruptions.

Corson and Sidlick (3) reported a case of urticaria which was caused by phenolphthalein. Their patient had taken a proprietary tablet (composition unknown) for constipation for over two years without any apparent ill effects. However, she developed urticaria following the third inoculation for typhoid prophylaxis. The eruption disappeared when the laxative tablets were discontinued, returning two months later when the laxative tablets were again taken. The authors were able to reproduce the urticaria by the administration of one grain of phenolphthalein.

Rosenbloom (5) observed a case in which herpes of the nose could be produced by the ingestion of as small a dose as one half grain of phenolphthalein.

Wise and Abramowitz (6) think that the eruption is produced by a split product of phenolphthalein rather than by the drug itself. Pollitzer, in discussing this article, is of the same opinion and suggests that the split product is probably produced in the digestive tract or in the blood.

TYPE OF ERUPTION

The clinical picture presented by the cases of phenolphthalein eruption so far reported is so uniform that it is probably safe to consider this condition a distinct type of dermatitis.

The eruption, as in the author's case, consists of numerous scattered, somewhat grouped, irregular polychromatic macular plaques, varying in size from a pinhead to a coin, or the palm of the hand. The color varies from pink to bright red, dusky violaceous and deep purple. The central portion of the plaque is usually violaceous with change in color towards the periphery where a pink or bright red areola may be present. With exacerbation the plaques may enlarge peripherally and become confluent or new macules may develop near the peripheries or upon the unaffected area. As the attack subsides the affected areas become pigmented and remain so for many weeks. During resolution slight scaling may occur. Vesiculation, erosion and superficial ulceration may occur, especially on the mucous membranes of the mouth and on the skin of the genitals.

The subjective symptoms of itching and burning may be either moderate or severe and mild constitutional symptoms may accompany the eruption. Relapses may follow the ingestion of phenolphthalein with the reappearance of the eruption on the sites of the primary lesions, sometimes with new lesions elsewhere. This type of lesion seems to be character-

Fig. 2.—The same eruption as that in Fig. 1, showing the desquamation which often accompanies the evolution of the plaques.

istic of dermatitis medicamentosa produced by phenolphthalein. Clinically it is a persistent erythema multiforme.

CONCLUSIONS

An additional case of dermatitis medicamentosa produced by phenolphthalein is reported.

The cases so far observed have presented such a

uniform eruption that it may be safe to consider phenolphthalein dermatitis as a distinct clinical picture.

Antipyrin may produce an eruption identical with that seen in these cases but the eruption produced by this drug is usually morbilliform, erythematopapular, scarlatiniform or urticarial in character.

The socalled fixed arsphenamine eruptions are usually pink instead of polychromatic and have more sharply defined borders. As Wise and Abramowitz have aptly stated, these fixed eruptions may often be due primarily to phenolphthalein, the patient having taken this type of laxative following arsphenamine without informing his physician.

In all cases which present an eruption consisting of polychromatic macular plaques which terminate in pigmented areas and with a history of recurrence at these sites, a tentative diagnosis of phenolphthalein dermatitis should be made. The possibility that phenolphthalein may be the etiological factor should be ruled out before any other diagnosis is suggested.

In cases of chronic urticaria and recurrent herpes phenolphthalein should be considered as an etiological possibility.

Patients who are susceptible to phenolphthalein should be advised not to take proprietary laxatives as most of them contain this drug.

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Treatment of Acne Vulgaris*

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Acne vulgaris is a complex of cutaneous lesions depending upon an abnormal heaping up of excessive numbers of stratum corneum cells and an abnormal, increased function of the sebaceous glands. Associated with these external manifestations, there are certain fairly constant constitutional symptoms. The whole picture is contingent on the disturbance in metabolism which develops consequent to delayed or perverted endocrine function during the period of adolescence.

In a study of the biochemical status of patients with acne vulgaris, it has been found that more than one half showed hyperglycemia or a high normal blood sugar. In about one third a low alkali reserve existed, and the feces from more than eighty per cent. of the patients showed carbohydrate fermentation. Most of the cases in which the metabolic rate was determined, showed a slight increase.

In a paper (1) read before this society just four years ago, I described the various constitutional and local procedures employed in the treatment of acne vulgaris. Since then further clinical studies and the previously mentioned laboratory experiments have corroborated the views expressed at that time. However, due to the advances made in the treatment of these patients by means of the x rays, it is advisable to review this subject. In order to save time and space, only the most important points in the general treatment of the patients will be emphasized and the x ray therapy described.

CONSTITUTIONAL TREATMENT

The constitutional treatment of acne vulgaris consists, mainly, in the correction of the diet, gastrointestinal supervision, prescription of general tonic measures and the administration of alkali and organotherapy.

DIET

The diet is made almost carbohydrate free. Sugar, candy, cake, pies, icecream, pastries, puddings, jam, jelly, cocoa, potatoes, cereals and sweet fruits are forbidden. Hard, irritating and fried foods are interdicted, as they interfere with proper digestion. Spices and condiments, alcoholic and stimulating beverages, like coffee and strong tea, are also prohibited as they tend to cause reflex dilatation of the cutaneous vessels and thus increase the congestion of the skin. Milk, cream, fermented milks, eggs, and vegetables should constitute the main foods. Meat or fish once a day, cheese, cool soups without flour, and no more than six slices of bread, each half an inch thick, complete the diet and suffice to provide ample nourishment as well as satisfy the patient's appetite and whims. Large quantities of water should be taken at regular intervals during the day to aid elimination through the kidneys and the skin. Most acne patients should be overfed and those who are underweight should be advised to drink three eggnogs daily between meals.

MEDICINAL TREATMENT

The care of the gastrointestinal canal consists, in most cases, of the application of the usual measures to overcome the constipation, to relieve the gastric hyperacidity and to remove the intestinal fermentation.

ORGANOTHERAPY

In the treatment of acne with organotherapy, it has been found that no one single gland will give a

*Read at a regular meeting of the Eastern Medical Society, New York Academy of Medicine, October, 1923.

constant result. Lutein, however, often seems to benefit those individuals with menstrual acne. Thyronucleoprotein is sometimes of temporary benefit to those individuals who seem sluggish; but if it is continued for too long a time, pustules appear in greater numbers. These tablets frequently give results where there are deep indurated infiltrated masses, and favor absorption of that obstinate type of nodular acne which, if neglected, tends to become necrotic. Adrenonucleoprotein is used in cases accompanying exophthalmic goitre.

TREATMENT OF ACIDOSIS

For the treatment of acidosis, the usual procedure is employed. Gratifying results often follow the administration of a powder consisting of potassium citrate, calcium lactate, magnesium oxide, and bicarbonate of soda.

VACCINES

Further experience with vaccines substantiate the conclusions which I have expressed in former papers. They are of no value in the treatment of acne vulgaris, excepting in rare instances when an autogenous or stock mixed staphylococcic vaccine will favor the disappearance of furuncular lesions.

X RAY THERAPY

During the past three years, I have used intramuscular injections of turpentine in conjunction with x ray therapy to hasten the absorption of deep, boggy lesions. Here it may be stated that the use of the x rays marks a memorable advance in the treatment of acne vulgaris. In former times, it was impossible to prognosticate positively the time and expense which would be necessary in the cure of a case of this kind. At present, however, it is possible to tell our patients that with proper supervision of the general condition and the local use of the x rays, a cure may be accomplished in ninety-eight per cent. of the cases within three to four months.

The apparatus employed for x ray therapy includes any standard interrupterless transformer with perfect metres and a Coolidge tube. The technic followed consists in the administration of fractional doses of x ray by the method of indirect measurement.

The patient is placed in the recumbent position and the face turned to one side. The scalp, the ears, the eyes and the eyebrows are covered with leadfoil and the chest and neck with lead rubber. The tube is then brought toward the face and inclined so that the anode is at right angles to an imaginary line drawn through the outer part of the zygoma. The skin distance, that is, the distance between the anode and the skin, is usually accepted at eight inches. A dose of one quarter of a skin unit of unfiltered rays is administered. The same dose is then applied to the opposite side. Finally one eighth of a skin unit is given to the middle of the face. It is advisable to give this last exposure even in the absence of lesions on the forehead, nose, and chin to insure against the future development of an eruption in these areas. When the back is affected each half is given one quarter of a skin unit. The shoulders and arms are exposed at the same time but precautions are taken to shield untreated regions. The same procedure is followed for the treatment of the chest.

The exposures are given once weekly for a period of twelve to sixteen weeks. At times no effect of treatment may be noted until after the eighth seance. Occasionally the lesions seem to become more active after the first two or three exposures, but this increased inflammatory reaction rapidly subsides. As a rule no more than sixteen treatments are necessary, but in the presence of very stubborn lesions without any erythema or atrophy, and especially if the skin continues to feel greasy, the course may be prolonged to the twentieth week. Always note the presence or absence of grease. If the skin becomes very dry the number of exposures should be reduced. Excessive dryness is not permanent.

Freckles and patches of increased pigmentation developing during the course of treatment do not contraindicate the continuance of treatment. These develop most often in brunettes and disappear after the cessation of treatment.

Relapsing lesions, when they do occur, usually appear about six months after the termination of treatment and rarely do they require more than six exposures to remove evidences of the disease permanently.

SCARRING

Regarding the question of scarring, it may be stated that the x rays neither cause nor increase the scars. These are the results of old comedones or deeper lesions and can be avoided by early institution of treatment. Neither is hypertrichosis caused by the rays. When present it is an accompanying condition and associated with the endocrine disorder. Telangiectasia are never observed and atrophy is very rare when proper technic is employed. Atrophy is first evidenced by a fine wrinkling on the cheeks and chin near the corners of the mouth and calls for postponement or discontinuance of x ray therapy.

The best results are obtained in the indurated cases and the rare failure in the punctate type. In the latter instances a strong sulphur lotion or a bethanaphthol ointment combined with mechanical expression of the blackheads should be tried. Another type of eruption which may give an untoward result is that in which there is an acneiform dermatitis. In the management of these cases the gastrointestinal condition should be corrected, the intestinal fermentation removed and the gastric acidity reduced.

The rays should not be employed promiscuously. One who uses them for therapeutic purposes should be able to interpret the clinical symptoms in terms of their microscopic pathology. The operator should possess an exact technic and knowledge of the microscopic changes produced by the rays on the structure of normal and abnormal skin.

RADIUM

Radium has been applied with success in the treatment of acne but holds no advantage over the x rays. Besides, it is not practical and convenient.

LOCAL TREATMENT

All patients receiving radiotherapy should be warned against the local use of, or exposure to, any form of irritant. The rays are never administered subsequent to the application of an irritant for at least a fortnight. Alcohol, witchhazel, tar, sulphur, salicylic acid, resorcin and all keratolytics are interdicted for local use. Mild soaps, zinc oxide ointment

and calamine and zinc oxide lotion may be employed. A weak solution of phenol may be added for antiseptic and antipruritic effect. The affected parts should be washed frequently with cold water and a neutral soap and the blackheads expressed gently without injury to the surrounding skin. Seborrheic eczema complicates almost every case and this should be treated. However, in the application of the antiseborrheic and stimulating applications to the scalp precautions should be taken to avoid irritating the face. Subsequent to the cessation of radiotherapy a calamine and zinc oxide lotion may be dabbed daily on the face, and if an oily condition persists a mild sulphur lotion may be begun after one month. The other methods of local treatment have been described in the paper already mentioned and to which the reader is referred.

CONCLUSIONS

In conclusion it may be stated that the introduction of the x rays in the treatment of acne vulgaris has changed the outlook on the ultimate outcome. The patient may be assured of a prompt and positive cure. The administration of fractional doses of x rays removes the hyperkeratosis and reduces the abnormal sebaceous gland function. The lesions disappear and the skin is made less susceptible to the obnoxious factors acting on it from within. While the visible evidences of disease are being removed, the internal derangements are corrected by constitutional treatment. When x rays are properly employed there is no fear of any danger. It is emphasized that the patient as well as the acne should be treated. Search should be made for any constitutional disorder and corrected in order to obtain a prompt cure and to prevent relapses.

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The Buccal and Lingual Mucosa in Neurosyphilis

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ETIOLOGY

The etiology of leucoplakia has long been a matter of controversy. Most observers consider syphilis, associated with some irritant, the most probable etiological factor, although all are frank to admit that they frequently encounter an extensive leucoplakia in an individual in whom the clinical diagnosis of syphilis cannot be substantiated. The French accept leucoplakia as prima facie evidence of syphilis even in the absence of supporting clinical or laboratory evidence. The Viennese school insist that leucoplakia is associated with syphilis in over ninety per cent of the cases. Ehrmann (1) teaches that the tissues of the syphilitic respond to any irritant to an abnormal degree and this fact explains the frequent association of syphilis and leucoplakia. Kyrle (1) is in accord with this view and states that in ninety per cent. of his cases he is able to find other clinical or serological evidence of syphilis. Among our own observers Ormsby and Sutton (2), McBride and Dennie (3) are convinced of the frequent association of syphilis and leucoplakia. Osler's (4) statement with regard to leucoplakia, that "most of the patients have had syphilis," is significant. Pusey (5) believes that long continued irritation will produce leucoplakia and does not consider the association with syphilis of great significance. Bloodgood (6) reports but twenty-one per cent. of his leucoplakia cases with a positive blood serum and infers that the association is accidental.

We have been impressed with the high percentage of men who show an early leucoplakia along with a positive Wassermann. This we believe to be explained by the fact that most of the cases under our observation have been young men. The leucoplakia is comparatively recent and the Wassermann is frequently positive. After the expiration of considerable time the leucoplakia persists and the Wassermann, either with or without treatment, may become negative.

There is an impression present in the French (7) literature that tabes and other manifestations of neurosyphilis are frequently associated with leucoplakia of the tongue and buccal mucosa, and the hypothesis is advanced that the presence of leucoplakia is evidence of an impending neural disaster. We have been much impressed with this observation and one of us has been for several years inspecting the mouth of every syphilitic who showed clinical evidence of neurosyphilis. The association between neurosyphilis and buccal leucoplakia was so frequent as to be startling. Unfortunately no exact data were kept until September, 1923, at which time it was decided to keep complete notes on the serological and neurological examination of every case of unquestioned neurosyphilis that came under our observation, and to study the buccal and lingual mucosa in association with the complete neurological and serological findings. No case was admitted to this series unless the evidence, both clinical and serological, was beyond question; in short, a frank case of neurosyphilis. The patients studied in this series were all young males, averaging about thirty years of age.

The existing degree of leucoplakia in our cases varied widely and as pointed out by Ormsby (8), soft infiltration representing a late secondary or early tertiary manifestation of syphilis frequently cannot be differentiated from leucoplakia. We are convinced that this clinical fact explains the occasional

favorable response to treatment noted after the administration of specific medication in leucoplakia.

CHARACTER AND EXTENT OF LESION

The entire buccal mucosa on both sides of the mouth may be of a light grayish tinge, a generalized manifestation, or the lesion may be more circumscribed along the line of occlusion running from the angle of the mouth to the third molar. This is a common and characteristic finding. The lines appear somewhat depressed as though pencilled with a stick of silver nitrate and frequently checked into small squares; difficult to describe and best compared to the checks in old pottery. The tongue is generally large and shows indentation from the teeth. Along the margin, where contact with the teeth is made, small slightly depressed areas, covered with epithelium which has a smooth glazed appearance, are frequently found at the lingual margin representing the site of some previous ulcerative process.

On the tongue the normal fissures are exaggerated and leucoplakia of any degree may occur. Exceptionally atrophic glossitis with the characteristic atrophic lingual mucosa with its peculiar glazed appearance may occur. In one of our cases the buccal mucosa showed an extensive leucoplakia, while the anterior portion of the tongue was markedly atrophic and covered by a smooth thin atrophic mucosa, causing the point of the tongue to present an appearance suggesting the point of an arrow head. W. L. McBride informs us that Hyde recognized this tongue as a rare clinical manifestation of syphilis and named the condition "arrow tongue." An accurate and comprehensive description of the buccal and lingual mucosa is difficult, but the lines that give the appearance of silver nitrate pencilling at the point of occlusion and the checkering are the outstanding features.

The lesion may involve the tongue to a greater degree than the buccal mucosa. Frequently a marked glossitis is found in association with a leucoplakia of the buccal mucosa. Careful inspection of the mouth in a good light is essential. Exceptionally a definite ulceration behind the third molar is found in association with a glossitis and characteristic changes in the buccal mucosa. Few patients are aware of the existence of leucoplakia in the mouth and the lesions must be of unusual severity to produce symptoms. Of the fifty cases of neurosyphilis studied in this series all presented characteristic objective findings along with a positive serology. Cases open to a reasonable element of doubt as to the diagnosis of syphilis were excluded.

Paresis was present three times, moderately advanced tabes six times, and the neural manifestations of vascular syphilis, clinically diagnosed as cerebrospinal syphilis, were present forty-one times. It is probable the latter group contained several cases of early tabes. Twenty cases showed an extensive leucoplakia involving the oral mucosa. Twenty-one cases showed a moderate degree of involvement of the oral mucosa with the characteristic pencilled lines along the line of occlusion. Eight cases showed slight but characteristic changes. The buccal mucosa showed leucoplakia in forty-eight cases. The tongue showed leucoplakia or glossitis but once with a normal buccal mucosa. As a rule, both the buccal mucosa and the tongue were involved, the leucoplakia frequently being present on the buccal mucosa while the tongue showed glossitis with numerous deep fissures and presented a peculiar glazed appearance. Only one case of the fifty studied presented a normal mucosa of the entire buccal cavity.

The history, objective findings, and serology, along with the description of the oral cavity in the three cases, are given representing the different degrees of oral pathology observed.

CASE HISTORIES

Case I.—Laborer, thirty-two years of age, who had a soft chancre fifteen years ago; had never received antisyphilitic treatment. He complained of headache, and pain in the abdomen at night. The location of the pain was rather indefinite but at times it was of sudden onset. He also stated that he was extremely nervous and irritable and did not sleep well. Neurological examination showed that the pupils were equal, slightly irregular, and reacted very sluggishly to light. The knee jerks were markedly exaggerated. Sensation was normal over the lower extremities. There was marked swaying in the Romberg position. Blood serum, four plus; lumbar puncture refused. Examination of the oral mucosa showed the presence of a typical and extensive leucoplakia involving the entire buccal mucosa on both sides. At the line of occlusion the leucoplakia was markedly intensified and a depressed line checked into small squares extended from the corner of the mouth to the third molar. The tongue was deeply fissured and markedly enlarged showing indentations from the teeth. The pathology in the oral mucosa was extensive.

Case II.—Hospital orderly, twenty-nine years of age, who denied all venereal disease. He complained of numerous and varied subjective symptoms along with "inability to control his eyes." The history was extensive and unusual and not of much value. A neurological examination was made showing that the pupils were round, regular, and very sluggish to light. There was a horizontal nystagmus present on looking forward which was exaggerated on looking in a lateral direction. Tongue protruded in midline. The deep reflexes were exaggerated but equally on the two sides. Abdominal reflexes were present and active. No ankle clonus, Babinski, Oppenheim, Chaddock or Gordon; no intention tremor; no incoordination or ataxia; no Romberg. The absence of speech defect and intention tremor and the presence of the abdominal reflexes excluded multiple sclerosis. The Wassermann on the blood was four plus and the spinal fluid showed globulin cell count of eighteen with a positive Wassermann. Examination of the oral mucosa showed a generalized superficial leucoplakia over the entire buccal mucosa, which is intensified at the line of occlusion. The continuity of this line is broken into numerous small squares which produces a checked appearance. The mucous membrane of the tongue was normal but the tongue was markedly enlarged and showed indentations from the teeth. The findings in this mouth were moderate but characteristic.

Case III.—A physician, forty-nine years of age, was accidentally infected with syphilis in 1905. The initial lesion was an atypical sore on the index finger of his right hand which was followed by a charac-

teristic sore throat. From this sore throat syphilis was diagnosed. Treatment extended over five years by mouth and inunction. Clinical signs of syphilis were not observed until the summer of 1918, when he had severe shooting pains followed by a typical and rapidly developing tabes. Blood serum negative, spinal fluid two plus. A neurological examination showed typical Argyll Robertson pupils, knee jerks absent, marked impairment of sensation over lower extremities, sphincters relaxed, and partial incontinence of urine present; Romberg positive. The patient did not smoke. Examination of the oral mucosa showed the presence of a slight greyish tinge over the entire buccal mucosa with loss of the normal lustre. There was a diffuse leucoplakia of slight degree, which was intensified at the line of occlusion, resembling a line drawn from the corner of the mouth to the third molar with a silver nitrate pencil. The tongue was normal. The findings in this mouth were slight but characteristic.

CONCLUSIONS

Although we have occasionally encountered an individual with leucoplakia in whom no other clinical or serological evidence of syphilis was present, we are convinced that the frequent association of leucoplakia buccalis and lingualis along with an associated glossitis is too constant to be an accidental finding and we believe that the presence or absence of these manifestations involving the entire mucosa of the oral cavity along with the associated objective findings is a valuable piece of evidence in formulating an opinion as to the presence or absence of clinical syphilis.

In our observations in fifty cases of unquestioned neurosyphilis changes in the buccal and lingual mucosa have been as constant a finding as any abnormality of the pupils.

Lathrop Building.

The author's references will appear in his reprints.

The Pathology of Pruritus Ani, Vulvæ and Scroti*

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The pathological findings in pruritus ani, vulvæ and scroti are identical in nature regardless of the region examined. Throughout the pruritic zone, that is, the area to which the sensation of pruritus is referred, we find a pathological condition of one of three types.

It will be borne in mind, however, that at some time in a certain percentage of cases even in the presence of marked subjective manifestations of which the pruritus is the chief one, absolutely no gross pathology is seen. I have observed innumerable cases in which the pruritus existed for a long time prior to any apparent tissue pathology, but have further observed that the itching is never quite as severe as when some break in epidermal continuity occurs.

The explanation of the occurrence of pruritus in an area entirely devoid of local pathological changes is explainable, to my mind, on the basis of a misreferred sensation entirely analogous to the misreference of pain. This theory is elaborated upon in my article (1).

Needless to say, these cases, with pruritus present but no objective manifestation, are of comparatively recent occurrence, for sooner or later a pathological condition does develop which finds classification as one of the types described later.

The particular findings in any one of the types described below are modified in degree and extent according to the time the condition has existed, because the changes are progressive and in direct proportion to the duration of the disease or its complication by other features.

The first type represents a subacute or chronic dermatitis of traumatic origin and is often the predecessor of the second type to be described. An examination of the skin in the pruritic zone in this type shows, in an early stage, an abnormal smooth fullness of the skin with a diffuse, dry, shiny redness. The skin also seems somewhat thicker and tougher than normal. Later the integument assumes the appearance of wet leather or pig skin, and is thick, tough and indurated in consistency. All natural ruddiness has departed from the skin, as well as the normal pigment, and it looks moist, soggy and of a grayish white color. The skin may become lichenified or hyperkeratotic, and, furthermore, because of hypertrophy it quite often becomes folded into broad radial creases, folds or ridges with consequent accompanying sulci between them. In these sulci a thin, watery fluid collects and this moisture being an abnormal condition naturally irritates and causes a progression of pathology. In early cases no lesions are evident, the skin being quite evidently unbroken. These changes are particularly evident in the anterior and posterior raphe. The pruritic zone in very chronic cases has fairly welldefined borders and appears circumscribed. In cases of pruritus ani the mucocutaneous margin is not fissured, but both this region and the lower three quarters of an inch of the anal canal appears congested. The sphincter is in the majority of cases slightly hypertonic. The pathological diagnosis in such a case is that the condition is a chronic dermatitis probably of traumatic origin.

My interpretation of this stage is that it represents a normal reaction on the part of the skin and mucous membrane of this region to the rubbing, scratching and other irritation to which it is subjected by the patient in his attempts to relieve, annul or inhibit the sensation.

The second type is that in which bacterial invasion is quite evident. The continuity of the skin is de-

*Read before the New York Pathological Society, December 13, 1923.

FIG. 1

FIG. 2

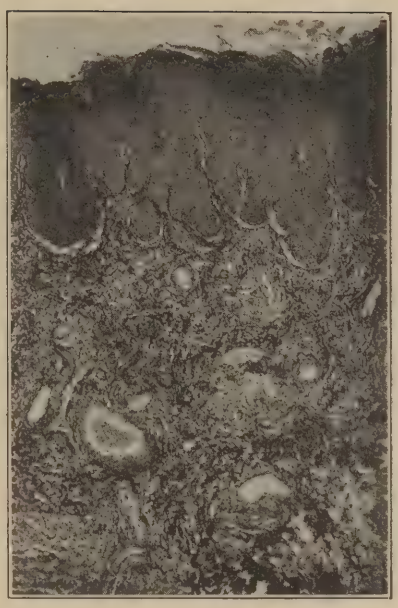

FIG. 3

FIG. 1.—Clinical diagnosis: Anal pruritus without evident lesions of the skin. Histological diagnosis: Chronic productive dermatitis. Features: Some hyperkeratosis, marked hyperplasia of the stratum mucosum with increased pigmentation; extensive increase in the interpapillary downgrowths; marked diffuse round cell infiltration of the corium; marked increase in the fibrous connective tissue element of corium. A large tactile corpuscle is to be seen. The tactile corpuscle of Meissner is seen surrounded by cellular infiltration. The walls of the bloodvessels seem sclerosed but there is no endarteritis.

FIG. 2.—Clinical diagnosis: Anal pruritus of great chronicity but no lesions of the skin evident. Histological diagnosis: Chronic productive dermatitis. Features: Hyperkeratosis, hyperplasia of stratum mucosum, great downgrowth of interpapillary processes; marked sclerosis of the fibrous connective tissue element of the corium. A tendency toward hyalinization of the epidermal cells is noted. Stain: Hematoxylin and eosin.

FIG. 3.—Clinical diagnosis: Anal pruritus without skin lesions. Histological diagnosis: Chronic productive dermatitis. Features: Marked sclerosis of the fibrous connective tissue of the corium extending up into the papillae. Stain: Picrofuchsin.

cidedly broken by abrasions and excoriations resulting from attempts to relieve. It, therefore, looks a dull red and has a cracked surface from the fissures of which oozes a sticky exudate. Sometimes a diffuse rose colored skin surface, over which is scattered moist, red, concave erosions, is seen. These erosions ooze serum profusely. In the interval between the fissures previously mentioned, the skin occasionally shows a minute vesiculation or more often considerable scaling of the epidermis. When the condition has reached the stage where it may be termed subacute or chronic, the changes in the skin are more pronounced and the area involved appears a dull red and feels harsh and rough to the touch. It is thick, tough and indurated in consistency. The infiltration and induration are similar to that usually caused by the deposition of an inflammatory exudate in a tissue of a low degree of vitality. In cases of pruritus ani the mucocutaneous margin is quite often fissured, sometimes in a multiple manner; the sphincter is decidedly hypertonic, and the mucous membrane of the lower three quarters of an inch of the anal canal deeply congested, dry and tough. Pathologically this condition is a subacute or chronic dermatitis probably of infective origin.

The relation of these two types to each other is variable. In the majority of cases the first precedes the second, but in many cases the disease starts without the occurrence of traumatic dermatitis.

In the third type we notice that the skin is evidently the seat of atrophic changes. It has become depigmented or has less of a soggy appearance and is of a grayish white color. The hypertrophic folds of the other types are present but less marked; they have, however, lost their natural ruddiness and the whole skin seems thinner. The sphincter may or may not be hypertonic. The lower three quarters of an inch of the anal canal is harsh, white and leathery. Pathologically, the condition is one of kraurosis.

MICROSCOPICAL PATHOLOGY

When tissue from the pruritic zone in a series of cases of this disease is subjected to microscopical examination the pathological findings are found to be one of three types:

1. In a certain minority percentage which are seen clinically early, even though the pruritus is intense, there is no pathology of any sort whatever; the tissue is normal. This type corresponds with the type in which no gross pathology is found. Needless to say, this type merges into that of the succeeding one.

2. In those cases which, in the gross, present evident pathology but no evidence of impairment of epidermal integrity the following processes are to be found: Hyperkeratosis; a thickening and proliferation of the stratum mucosum due to hyperplasia. Consequent upon this there is a great growth downward of the interpapillary processes (Figs. 1 and 2). Connective tissue hyperplasia (Fig. 3) is also present and a marked sclerosis of the connective tissue of the corium occurs which extends well up to the base of the papillæ and even up into the papillæ themselves. Figs. 3 and 4 are specimens of such cases stained by Van Gieson stain which, of course, shows up particularly well the connective tissue in a section. The bloodvessels are not dilated but are surrounded as is every other structure in the corium, by a collar of sclerosed connective tissue. Scattered infiltration of the corium by a cellular element which is composed chiefly of round cells, also occurs. This

Fig. 4

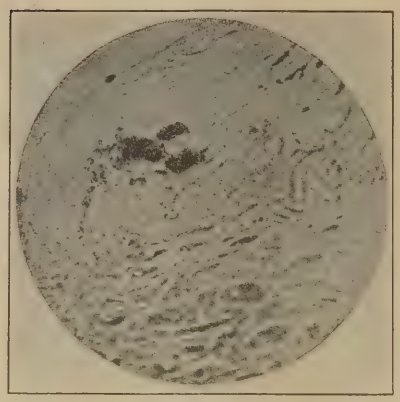

Fig. 6.

Fig. 4.—Clinical diagnosis: Anal pruritus without lesions of skin. Histological diagnosis: Chronic productive dermatitis (almost to the point of kraurosis). Features: Marked sclerosis of the fibrous connective tissue of the corium extending up into the papillae and surrounding the bloodvessels. Stain: Van Gieson.

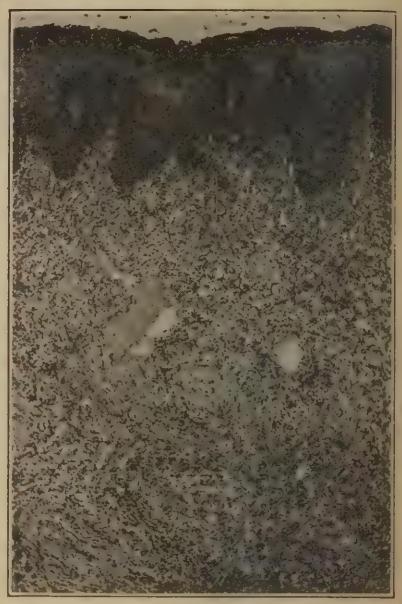

Fig. 5

Fig. 5.—Clinical diagnosis: An acute exacerbation of a pruritus ani of short duration. Histological diagnosis: Subacute exudative dermatitis of infective origin on a basis of chronic productive dermatitis. Features: Marked pigmentation of the epidermal layers; dilatation of the lymph spaces; diffuse cellular infiltration of corium, particularly intense subepithelially; some vascular dilatation; general edema of the tissue. Stain: Hematoxylin and eosin.

Fig. 6.—Bacteria found in the epidermal tissue in a case of pruritis ani.

cellular infiltration is not perivascular and hence, we may conclude the causative factor is not a blood borne toxin. There is also noted in some cases an increased pigment in the stratum granulosum with occasional deposit of pigment in the corium due, perhaps, to diapedesis of the red blood cells.

The pathological diagnosis of such a section is that it is significant of a chronic productive inflammation probably of traumatic origin. The process is essentially a chronic one, although in some cases an acute exacerbation may be found superimposed upon this chronic productive dermatitis. In general the process can be said to vary in degree in direct proportion to its chronicity.

3. We now come to that class of cases in which bacterial invasion is evident. Clinically it may be stated that in all these cases a solution of continuity in the overlying epidermis has occurred through the agency of one or more of the mechanical forces. In other words, in those cases lesions of the skin are present.

In such cases we not only see that conditions due to nondesquamation of hyperplastic epithelial cells known as hyperkeratosis, but also a marked hyperplasia of the rete cells with intracellular edema (Fig. 5) tending toward vesiculation and hypertrophy and projection downwards of the interpapillary processes. The conenctive tissue element of the corium is decidedly increased. We also note a marked subepithelial cellular infiltration in which the polymorphonuclear element is predominant, and some red blood cell diapedesis. There is marked dilatation of the lymph spaces, some vascular dilatation, and a general edema of the tissue. Sections of this type of case occasionally show upon Gram-Weigert stains scattered clumps of bacteria *in situ* in the upper layers of the tissues. It must be remembered that we have as yet no satisfactory methods of staining tissues to show gram negative microorganisms; hence, we cannot definitely say that such organisms as Bacillus coli are not found.

Despite great care in the selection of cases, the obtaining of specimens and the staining bacteria were found in only seventy-four out of some 1,700 sections examined. This of course must not be construed as being indicative of the absence of bacteria in all but the seventy-four cases. All that it can logically be assumed to signify is the success of the staining methods used in these instances.

Fig. 6 shows a section in which I have been able to demonstrate their presence. In all the specimens showing organisms present, said organism was, morphologically, a staphylococcus, and this was substantiated on culture in each case. In no case did their invasion appear to reach further than halfway to the basement membrane of the epidermis. Likewise, in each case there was an evident break in the surface epidermis or a distinct cystolysis of the superficial layers. There was not a single instance in which bacilli coli or the streptococcus fecalis was demonstrated in the tissues by staining methods. I have been able to demonstrate bacilli coli by cultural methods. These are described elsewhere.

The conclusion naturally follows that where the epidermis is injured by traumatism or maceration an invasion of bacteria may occur. This invasion in the cases studied is moderate and limited, due either to the resistance of the epidermal cells or to the low virulence of the invading organism.

The picture is that of an acute or subacute exudative dermatitis in some cases of mechanical and, in other cases, of infective causation. The cellular infiltration in these cases can be demonstrated to be particularly abundant in the papillæ around the end bulbs of Meissner (Fig. 1).

As an end result, lichenification and kraurosis result in both these types.

The usual sequence of pathological events in these

cases is, therefore, first, a condition of normal tissue or normal tissue plus the inciting lesion; second, a chronic productive dermatitis of traumatic origin, or in some cases an acute or subacute exudative dermatitis of infective origin which may later in both cases progress to that atrophic dermal condition known as kraurosis.

The foregoing are the essential pathological findings, but it must be mentioned for the sake of completeness that within the pruritic zone there also may occur, in some cases, various associated pathological conditions, which, though not a part of the pathological process of the disease, may contribute some features to it or in some cases furnish an actual inciting agent. As such may be mentioned condylomata, prolapsed hemorrhoids, fistulæ, ulcers in the terminal portion of the anal canal or between the two sphincters, small sinuses burrowing from the anal pockets, and the presence in some cases of parasites, such as pediculi, scabies, pinworms or thread worms and sometimes fungi.

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Hypertrichosis: A Serious But Much Neglected Subject

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INTRODUCTION

Two impelling motives caused me to select this subject for discussion. First, during the year 1919 I was requested by a friend to interest myself and see what could be done for his three daughters. Their ages were eighteen, twenty, and twenty-two years, respectively. Each one had become melancholy and morose as the result of a severe inherited condition of hypertrichosis of the face. I consulted various medical friends, and their joint advice amounted to the continued use of depilatories, shaving, and tweezing. A few dermatologists suggested electrolysis, but did not themselves do this work. For two years these and other suggestions were tried, only to end in failure and disappointment. I realized that with all the skill and science of the medical profession such a socalled simple thing as hypertrichosis was beyond their reach.

Secondly, in 1921, my attention was called to an article by Benjamin Reiley (1) describing his observations of the work done in hypertrichosis in Cornell Medical College by Albert C. Geyser. In the Academy of Medicine I found many of Geyser's writings concerning this anomaly. During 1921, these three sisters were treated by Dr. Albert C. Geyser. It required only six months to eradicate completely every trace of superfluous hair, and their faces have been absolutely clean and free from every blemish for two and a half years. I have every reason, therefore, to consider that the results are permanent. Two of these sisters have since married. I doubt whether that could have been consummated previous to the hair removal. This is my second reason for calling the attention of the medical profession to such an apparently insignificant disfigurement as hypertrichosis.

CAUSES

There is no doubt concerning the truth of the statement made by several competent observers that hypertrichosis or superfluous hair is on the increase. As far as my personal experience goes, I would say that there are two primary causes, viz., heredity and some internal gland derangement.

Heredity is easily understood, while the internal gland derangement is more difficult to grasp. The essential difference between these two causes is found in the fact that the hereditary type manifests itself during early or almost infantile life, while the glandular variety makes its appearance either about the time of puberty or at the menopause. We might add a third cause, namely, a combination of heredity and internal gland derangement.

There is, of course, little or no difference between these causes from a physiological or pathological point of view. There is, however, a marked difference in the behavior of these classes under therapeutic treatment. The first or hereditary cases respond quickly and permanently to modern therapeutic measures. When we are dealing with a derangement of the internal secretions, we are not able to remove the cause. We may remove the hairs but there is always the possibility of a regrowth. Although experience has shown that when the hair papillæ are thoroughly atrophied, sooner or later even these patients can be assured of a permanent eradication of this unsightly growth. As might be expected the foregoing remarks apply with an even greater degree to mixed cases.

USE OF COSMETICS

The reason for the general increase of hypertrichosis is not difficult to trace. The almost universal use of cosmetics, rouge, powders and lipsticks, has led to the more close inspection of the face for blemishes. As soon as a few fine hairs are discovered, they are promptly tweezed out. Each hair so tweezed strengthens the hair papilla, which cannot be removed, to the production of a more vigorous growth. Sooner or later the young miss makes use of the

various depilatories which is equivalent to shaving. All of the fine hairs so removed take on active growth.

Another method which cannot be condemned too strongly is the application of shoemakers' wax. This method of removing the hairs not only fails to affect the hair papilla but it tears off or out the individual hairs below the skin surface. When the hairs have attained even a moderate growth, the hair follicle becomes occluded after such wholesale tearing out from the general skin irritation. As a result the new hair fails to find the former exit and remains buried beneath the surface of the skin. Such a hair becomes practically a foreign body, it forms a pimple and festers its way out. When this shoemakers' wax is used in the axillary region the development of large abscesses is not uncommon.

The present day tendency of overbeautifying the complexion, then, is the direct cause of the noticeable increase in facial hypertrichosis.

TREATMENT

All attempts at removal with the razor, wonderstone or pumice depilatories, shoemakers' wax, etc., ought to be condemned. At best they are only a makeshift and defeat the very object sought. Electrolysis is too tedious, painful, and uncertain. The x ray, as originally discovered by Röntgen and afterward advocated by Schiff and Freud of Vienna, has now been completely abandoned as too dangerous, on account of its many and varied wave lengths.

Albert C. Geyser, formerly of Fordham and Cornell Universities, devised a method that is at once safe, sure and permanent. With this method only the shortest wave lengths are selected by means of a magnetic wave selector. I have had the unusual opportunity and privilege of observing upward of one thousand consecutive cases treated with this homogeneous wave length.

As a general proposition a certain area of the face or body is exposed once every two weeks. About three to five exposures cause the hair shafts to become loosened from the papilla. If after three more such exposures a biopsy is made, the papilla is not only atrophied but as a rule completely absorbed. From such a papilla it is of course impossible ever again to grow a hair.

Perhaps the most interesting point about this treatment is the fact that in upward of ten thousand applications, which came under my personal observation during the last year, there was not a single untoward effect upon the skin so treated. On the contrary, in all cases which had previously been exposed to the old time x ray treatment with the usual wrinkling and drying of the skin, became practically normal in a few weeks' time.

In conclusion, I would urge the general adoption of this method in all cases of hypertrichosis. The medical profession as a whole has looked rather too lightly upon this anomaly, but to the young woman afflicted with an overgrowth of hair, especially upon the face, this is a serious matter. She deserves the deepest sympathy and the best skill the medical profession can offer.

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Insulin in Furunculosis

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Recently, while treating a case of persistent furunculosis over the entire body, I decided to use insulin, because the patient had a high normal blood sugar. The result was so gratifying that I think the case worthy of reporting.

Case.—J. B., aged forty, had suffered from precordial pain for several weeks. He was advised to take diathermy treatments, for which it was necessary to shave the hair off the chest. Several days later there developed at the site of the shaving a few hair follicle infections which coalesced and soon formed larger furuncules. These were opened and drained but in a few days the entire body was covered with over one hundred small abscesses, many of which required incision and drainage. The patient was very uncomfortable, and to say the least, was in an extremely miserable condition. Culture of the pus showed a staphylococcus aureus and an autogenous vaccine was made. The urine examination was negative. Since the condition was becoming progressively worse and although the urine was negative, it was decided to do a blood sugar test, as the patient appeared to be a potential diabetic, being stout and nervous. The blood sugar was 140 mg. which, while within normal limits, might be called a high normal. It was decided to use insulin and two units were given daily for four days. The furuncles began to clear on the second day of the treatment, and disappeared entirely in four days, almost like magic. There has been no recurrence and the patient is comfortable again. The rapid disappearance of the furuncles after the second injection was remarkable.

This case proves the value of insulin in cases of furunculosis where there is hyperglycemia or even a high normal sugar content of the blood. Insulin should never be given in these cases unless a blood sugar test has been taken, otherwise disastrous results may follow its indiscriminate use in furunculosis. However, in proper hands, and with accurate blood sugar readings, insulin is of distinct value in cases of furunculosis and should be tried in every case.

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The Serological Diagnosis of Syphilis

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Of all diseases syphilis is the most protean in its manifestations and a tremendous responsibility therefore rests upon those directly or indirectly concerned with its recognition and treatment. There are few conditions presenting, as an aftermath of an erroneous diagnosis, more farreaching consequences; none requiring more skilled powers of observation and deduction, more acumen in the interpretation of the phenomena observed. Whether syphilis should be relegated to the hands of those especially trained and particularly adept in the management of this disease may be a matter of debate; that it ever will be is a dubious assumption. Probably the larger proportion of cases will be seen by the practitioner at large.

Prior to the application by Wassermann in 1906 of the complement fixation reaction to the diagnosis of syphilis, the recognition of the infection was contingent upon: 1, a careful and painstaking history carried, if need be, to the point of crossexamination; 2, a thorough, minute, and painstaking physical examination; 3, when these were indefinite, the employment of the socalled therapeutic test in which the syphilitic character of the lesions was held to be established if improvement occurred under the use of antiluetic remedies.

The introduction of the Wassermann test can safely be said to have had a pronounced effect upon the clinical study of syphilis in that, to some extent more or less marked in accordance with varied circumstances, the test was made to take the place of both history and physical examination; and it is undoubtedly true that in a definite proportion of cases the diagnosis of syphilis or the assumption of its absence has rested entirely upon the results of a single, isolated serological examination.

The natural result has been the production of situations tending to cast discredit upon the test and its performers with the subsequent expression of mutual recriminations between clinician and serologist. An unfortunate concomitant of this situation has been the tendency of each to foregather with his kind and for both to overlook the fact that only by the cooperation of both can the best results be obtained for the patient, in whose interests, after all, both are working.

Instead of each side having as its favorite "indoor sport" the pronouncement of a solemn indictment upon the other; instead of the clinician expressing in measured tones the necessity for the serologist to "realize the responsibility that is his for a false report" (1) or emphasizing that "they—the serologists—should get together and perfect their technic in such a manner that we may with safety accept their reports on their face value"; instead of the serologist giving vent to muttered and sometimes violent criticism of the clinician in regard to use of the test, or making pleas that he temper his demands upon it with at least an elementary understanding of the principles upon which the reaction is based, is it not time that the diagnosis of syphilis rest, not always upon clinical observations alone, nor upon laboratory investigations alone, but upon the combined and pooled knowledge of clinician and serologist working in unison?

The important thing is the diagnosis, and a diagnosis in any condition—and particularly is this true of syphilis—depends, not upon any one factor, but upon the combined significance, upon the *sum total* of all the observations made.

There are few conditions in which the powers of clinical observation must be more keenly developed and in which the results may be more fallacious than in syphilis. A chancre may be far from typical in appearance; a suspicious rash entirely nonluetic in origin; and it must be remembered that mercury, the iodides, and even the arsenicals have therapeutic values in conditions other than syphilis. Under such conditions even the most thorough of examinations, the most careful of histories, may result in inconclusive evidence; naturally, therefore, the advent of the Wassermann test and the dark field illuminator was received with avidity.

But it will never be possible for any method of laboratory examination to relieve the clinician of the necessity for anything other than the collection of the specimen. Unfortunately, the tendency has been to throw the entire burden of proof upon the laboratory, overlooking the fact that the Wassermann test and the dark field may be negative in a definite proportion of cases. Nor does the reason for this, par-

ticularly in the case of the dark field, always lie in the laboratory.

If it is important and essential to have a knowledge of the various laboratory procedures which are capable of transmitting informative data in various pathological conditions, it is equally important and even more essential to have, also, a knowledge of their limitations and their fallacies. Every laboratory examination must be interpreted, and the complement fixation test is no exception—it will never be automatic.

For the diagnosis of syphilis there are several desiderata:

1. There should be something more than a perfunctory history. A denial of infection is of little value. Not only must questions be carefully devised, but any possible "leads" uncovered by the entire history should be tactfully followed up.

2. The physical examination should include a definite attempt to note the presence or absence of findings of value in connection with lues: scars, adenopathy, reflexes and the like should all be investigated.

3. Not until now should the laboratory enter the field by way of the dark field or the Wassermann test.

4. Finally, when all the data are thus gathered, both serologist and clinician should cooperate in their proper evaluation and especially is this true when the various findings are puzzling or indefinite.

Much has been written and still more said concerning who shall be the interpreter. In the long run it is not the honor nor the pride of the clinician or the serologist which is at stake; something more vital, farreaching, and important than such minor personal considerations is at issue—the welfare of the patient.

Few there are—clinician or serologist—who are willing to assume responsibility for the aftermath of a missed diagnosis of syphilis, missed because of lack of skill or care; fewer still to carry the burden of a false diagnosis of syphilis where none exists with its sequelæ of unnecessary physical and mental suffering. The responsibility should be equally divided and equally shared. What, therefore, should the serologist demand of the clinician in the way of cooperation?

First: That he be sufficiently acquainted with the mechanism and rationale of the laboratory methods of examination to assure the proper collection of specimens for examination, for many and various are the factors thus concerned in influencing the results of tests made.

Probably every serologist has had the experience of being asked to make a dark field examination on a lesion which has been energetically treated with salves, powders, washes, and even the cautery, and the chances are that the clinician deeming such a lesion suitable for dark field examination is quite likely to decide against the possibility of syphilis on the basis of a negative finding secured under such circumstances. Every serologist has, at times, received specimens of blood in every conceivable sort of bottle, at times even on slides; hemolyzed by alcohol used in sterilizing the syringe with which the specimen was taken; in containers of all sizes and shapes, neither sterile nor absolutely clean or washed with various solutions apt to render the specimen anticomplementary. Consistent and reliable results under these conditions are quite difficult.

Second: That the clinician realize that when the serologist transmits a positive or negative report he implies by that statement, not that the one patient has syphilis and the other not, but simply that the blood examined did or did not contain a substance capable of fixing complement in the presence of a syphilitic antigen *at the time of examination.*

The meaning, significance, and interpretation of such a reaction is a matter wholly beyond and outside the fact of its occurrence, into the estimation of which many factors enter, among which are: a, the other collected data relative to the case—for which the clinician is responsible; b, the suitability of the specimen for such examination—with which both clinician and serologist are concerned; and c, the delicacy, reliability, and dependability of the technic used in making the examination—for which the serologist must accept responsibility.

Third: That if the clinician desires to saddle upon the serologist the burden of responsibility for the interpretation of the complement fixation test, he appreciate the necessity for giving the serologist the facilities extended to any other consultant in obtaining such additional clinical and historical data as may be needed.

Fourth: That if the clinician assumes the responsibility for the interpretation of the test, he also assume the responsibility for acquiring sufficient familiarity with all the details and factors influencing the result; that he be perfectly familiar with the limitations of the test and competent properly to evaluate its results.

These requirements being fulfilled, there will be no queries as to why a specimen was anticomplementary and what that means; fewer debates as to how a complement fixation test could be negative when the patient undoubtedly has syphilis, and vice versa; and less discontent on the part of both serologist and clinician anent the faults of the other.

On the other hand, what should the clinician demand of the serologist?

First: That he should *be* a serologist, thoroughly trained and grounded in the elements of his specialty and not merely a manipulative expert; that he should be thoroughly competent, not only to evaluate the results of the studies of others, but to conduct informative investigations of his own.

Second: That he should be a continual student in his own and related specialties.

Third: That he should take an active part in the constant endeavors to throw light upon the subject of the serological diagnosis of syphilis.

Fourth: That, when called upon, he should have had sufficient clinical experience correctly to correlate and interpret the combined clinical and laboratory data pertaining to the particular case.

Fifth: That he should not be unalterably wedded to one method alone but willing and eager to investigate the merits of new proposals and, if these are substantiated, to adopt them in his own work in part or entire as occasion demands.

Sixth: That he should be satisfied in so far as is possible of the reliability and delicacy of the method he prefers on the basis of experience; willing and

able to interpret the results, and equally willing to substitute another for it when he shall have been shown that it is superior.

Granting a cooperative response to such requirements; granting a realization on the one hand that the laboratory examination may be vastly influenced by circumstances surrounding the collection of the specimen; granting that the complement fixation test may be negative in the presence of syphilis and, also, with the usual methods in vogue, occasionally positive in its absence; granting that the results of the laboratory examination should never be allowed to overshadow the clinical data obtained; granting the essential importance of gathering such clinical data with which the laboratory data may be correlated; granting the combined and united efforts of both serologist and clinician, results of incalculable benefit to all concerned are bound to follow, and in such cooperation lies the greatest hope of the eventual conquest of the spirocheta and its admiring circle of lymphocytic satellites.

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Vasovesiculitis Simulating Acute Appendicitis

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The possibility of mistaking acute seminal vesiculitis for acute appendicitis is fairly well known, especially among genitourinary practitioners; yet few reports on the subject are found in general surgical literature. Hence it would seem justifiable to call renewed attention to the subject and to report the appended examples.

Case I.—In August, 1916, one of us was called to a neighboring town to see a patient in a hospital who wished the diagnosis of appendicitis confirmed before operation by one of the local staff. He had been sent to the hospital by his family physician as a case of acute appendicitis. This diagnosis had been agreed with by the hospital surgeon, and preparations were being made for immediate operation. The history obtained at the time, briefly was as follows: The man, a chauffeur, married, aged twenty-eight years, had been at his usual work without complaint until the afternoon of the previous day when he began to experience rightsided abdominal pain, which came on gradually, but with increasing severity. He continued at his work until his time for leaving, 6 p. m. By 9 p. m. the pain was severe enough for his wife to insist upon calling a physician who arrived at 10 p. m. and, after an examination, made a diagnosis of acute appendicitis. He (the patient) thought his temperature was rather high, and stated that he had been nauseated, but had not vomited. My examination revealed distinct tenderness in the right lower abdominal quadrant somewhat below McBurney's point. In fact, pursuing the examination further, the greatest tenderness was found to be in the right half of the hypogastrium. The cord, epididymis and testes were investigated and a rectal examination made. The vesicles were distinctly tender, and upon milking the urethra a small drop was made to appear at the meatus. The patient then admitted that he was at the time under the treatment of another physician for gonorrhea.

Case II.—T. S., aged thirty-one years, consulted us July 12, 1923, with a history of repeated attacks of urethritis. The smear showed many intracellular and extracellular gonococci. The glass test showed pus in both the urines, but most abundant in the first. The prostate was not enlarged or tender, and the vesicles were not palpable. His general health seemed perfect, and he had no other complaints. The Wassermann was negative and the colloidal gold test two plus. The usual weak irrigations were made on the 12th and the 13th. On the 14th he presented himself at the office complaining of pain in the right iliac region. The pulse was 96, the temperature 99.4°. There was some nausea. A cathartic had been taken, but usually he was not constipated. As this patient was under our treatment for Neisserian infection, the question of the possibility of acute appendicitis did not seriously arise, but there were so many points suggestive of the latter that conceivably a superficial diagnostician, in the absence of the history, might fall into error.

A description of the findings and the further course in this case is perhaps interesting. Examination revealed the following: There was a point of maximum tenderness located on a line drawn from McBurney's point to the spine of the os pubis and one and a half inches above the latter. The right spermatic cord was slightly enlarged and tender. The rectum was hot and the right vesicle tender. There were no subjective urinary symptoms, but both glasses contained coarse flocculi and *tripperfäden*. The urine was acid, specific gravity 1,023, color golden yellow, trace of albumin, but aside from pus and epithelial cells there was nothing else of interest.

In describing the pain he stated that it came on gradually, seemed deep in the pelvis, and decidedly accentuated on deep breathing. He felt very feverish, his appetite was impaired. Balsams and alka-

lies and bland diet were ordered, injections omitted, and he was advised to remain off his feet. He nevertheless worked that night, his occupation of club-keeper permitting him some latitude, and he stated, when seen the next day at his room, that he was on his feet but little. Examination on the afternoon of July 15th confirmed the previous findings, but the pain was worse and the possibility of confusion with an atypical case of appendicitis was even greater. There was also pain posteriorly over the right kidney. The diagnosis of Neisserian deferentitis and vesiculitis was made with entire assurance, the outcome confirming it. He appeared at the office on the 17th with all of the symptoms on the wane.

Case III.—A man, twenty years of age, was admitted to the surgical service of Cook County Hospital with an examining room diagnosis of acute appendicitis. He complained of pain and tenderness in the right lower quadrant, of about ten hours' duration. The pain was first felt in the right iliac region and continued to be localized in this area, but was much more marked at the time of entrance to the hospital than at the onset. There was no chill or vomiting; some nausea was present. Gonorrhea was at first denied, but the patient subsequently admitted having had an acute attack three weeks previously, and that he had been treating himself for fear of exposure. Temperature was 101°, pulse 98, respiration 20. There was definite localized tenderness in the right lower quadrant, somewhat lower than McBurney's point, most marked along the course of the inguinal canal, and right rectus rigidity in the lower half. Testicle and epididymis showed no abnormal findings. No urethral discharge. Blood findings: hemoglobin, 90; leucocyte count, 11,500, with 80 per cent. polymorphonuclears. Urine, first glass cloudy; second glass hazy.

We had almost come to the conclusion that the case was one of acute appendicitis, but decided to make a rectal examination for the sake of completeness. This revealed a tender, enlarged and distended right seminal vesicle and a distinctly tender, palpable vas deferens. The prostate was also tender. With this additional evidence and admission of a previous gonorrhea, the diagnosis of acute seminal vesiculitis and deferentitis seemed more likely, but for fear of probable error, Dr. R. T. Vaughan, night warden and member of the surgical staff, was called to see the patient. After an examination he concurred in the diagnosis of acute seminal vesiculitis, and commented upon the possibility of confusion with acute appendicitis unless careful examinations were made.

This case emphasizes the value of rectal examinations especially in atypical or dubious cases of suspected appendicitis.

The number of cases cited might have been multiplied, but the three selected will serve to exemplify the point of this article.

COMMENT

Such men as Keyes (1) and Cabot (2) make no reference to the possibility of confusing vesiculitis and appendicitis. White and Martin (3) state that seminal vesiculitis has been mistaken for appendicitis and the symptoms may be identical. Of works on general medicine and surgery, John A. Lichty (4), in an extensive article on the differential diagnosis of acute appendicitis, does not mention seminal vesiculitis. Osler and McCrae (5) make no reference to this source of error. Herbert French (6) fails to list seminal vesiculitis among the causes of pain in the right iliac region. The late J. B. Murphy (7) states that "acute infections of the vas are to be thought of." Guiteras discusses the remote manifestations of inflammation of vasa and vesicles in the following words: "Pain occurs principally in the perineum, the groin and the glans penis. It may also, though less often, be noticed in the testes, sacroiliac region, the back, deep in the pelvis, thighs, and loin. It may be connected with urination or defecation, or may be independent. Pain in the perineum is sometimes described." But he ignores the occurrence of cases such as we cite.

The current literature of recent years contains occasional allusions to the fact that abdominal symptoms may occur with seminal vesiculitis. E. M. White (8) says: "The abdominal symptoms are due to the peritoneal investment and may simulate acute appendicitis, ureteritis, ureteral colic or stone, and due to the close proximity to the bladder, abscess formations with perforations into this viscus have been reported, also rupture into the peritoneal cavity by way of the rectovesical cul de sac. Pyemia has been known to follow a septic phlebitis of the adjacent venous plexuses. Pelvic cellulitis with marked suppuration is possible. Dull, persistent, suprapubic pain, constant pains in the lower lateral quadrants of the abdomen with a chronic urethral discharge should always suggest vesicle trouble. All the author's cases had one or more abdominal symptoms.

On the other hand, so experienced an authority as A. L. Wolbarst (9), in a recent contribution on the diagnosis and surgical treatment of seminal vesiculitis overlooks this important diagnostic snag.

CONCLUSIONS

The point of the present communication is that all practitioners who are called upon to decide the presence or absence of appendicitis in the male, should make certain, particularly if the suspected case is somewhat atypical, that the seat of the trouble is not in the vasa and vesicles. All that is necessary is to keep in mind the possibility, and a digital rectal examination will make clear the differentiation.

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The Prostates We Should Not Massage*

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Owing to the ease with which the diagnosis of chronic follicular prostatitis can be established we have been, and still are, passing through a phase of rather indiscriminate prostatic onslaughts. Too little care has been taken in determining whether such treatments promised benefit or would be productive of harm to the patient. Discontinuing the local attack upon the gland when trouble had eventuated, instead of foreseeing such a possibility, has been instrumental in discrediting this extremely valuable procedure in many quarters and has been productive of complications of much gravity in not a few patients.

The dividing line between the prostates that are benefited and those that are harmed by any kind of manipulative treatment is not always easy to determine. It is, however, of the greatest importance that they be differentiated from one another. The recognition of those that should not be massaged often taxes one's clinical judgment to its utmost; doubts often arise and when they do a good rule to follow is, do not massage.

There are certain groups in which doubts should not arise and in which judgment should dictate the safest course. On the other hand, certain borderline groups are prone to mislead, for which reason an effort will be made to discuss them briefly.

THE ACUTELY INFLAMED PROSTATE

It seems hardly necessary to sound a note of warning against digitally disturbing such an organ, but it does not always escape insult. Such prostates are usually hot, swollen, throbbing and decidedly tender. Their massage is a blunder that may cause abscess formation by breaking down the barriers to infection that nature is trying to form. Also, it is conceivable that even greater damage could be done by causing a systemic invasion by the infecting organism.

THE TENDER PROSTATE

Proper massage of the chronically inflamed prostate is uncomfortable but it is not acutely painful. The general rule can be made that the very tender prostate, if massaged at all, should be massaged with the utmost gentleness and care. It is a borderline gland which should arouse suspicion.

Under this heading might be included a type of infected prostate, the diagnosis of which can be obtained only from the history, as it may be perfectly normal to palpation. The history of these patients is that suddenly, either with or without vesical discomfort, there appears a cloudy urine, at times followed by a urethral discharge. The condition is apparently due to the rupture of small submucous pus pockets, though there is seldom any acute pain. These patients commonly give no history of previous venereal disease and are usually free from gonococci. The seizures are often accompanied by a frequency of urination, lasting several days and then subsiding. Recurrences are common. Palpation of these prostates shows nothing diagnostic, though there is often great tenderness if gentle pressure is made upon the midline in the region of the vesical outlet. While these prostates are loaded with pus, massage should be withheld until the tenderness is no longer present, and discontinued if it causes prolonged discomfort.

THE CALCULOUS PROSTATE

The presence of calculi in the prostate is usually discovered by the transmission of a clicking or crepitating sensation to the finger. Calculi of varying sizes may, however, be present in the gland and not be discovered. This probably accounts for a small number of the prostates that are not improved by any form of treatment. Stones of any considerable size will generally cast an x ray shadow. Massage of these glands does no harm, as a rule, but it rarely does any good except where there are distinct symptoms of toxic absorption from the prostatic acini.

THE NODULAR PROSTATE

Nodules of any kind in the prostatic substance should be viewed with great suspicion and massage withheld until they are proved not to be tuberculous or malignant.

Theoretically, interstitial inflammation of the prostate can cause marked nodulation of the gland and, from an academic viewpoint, such must be admitted to be the case, but from a practical, clinical view this possibility had best be forgotten.

It is not enough to consider that only hard nodules are tuberculous or malignant. The acute tuberculous focus is not hard and in the markedly nodulated tuberculous prostate soft swellings are common. Massage of the tuberculous prostate is usually followed by marked activity in distant organs, if not by a generalized miliary tuberculosis and death. Also, massage is poor treatment for malignancy. The proportion of such prostates that are subjected to massage is far greater than it should be.

THE NONRESPONDING PROSTATE

Under this heading may be grouped that considerable number of patients in whom there seems to be clinically no contraindication to massage but who either grow worse or do not improve during the time it is carried out. It can be safely said that if the local symptoms of these patients are not improved or banished after six weeks of treatment a pathological condition exists other than a follicular prostatitis. By this it is not to be inferred that one can render such glands free from pus in that time but that there should be a subsidence of subjective symptoms and an improvement in objective. These patients should be given a careful cystourethroscopic study. In most of these prostatic urethræ will be found the lymphocystic bodies that I have described as an evidence of systemic tuberculosis (1).

Whether or not you accept my statement as to their etiology, the fact remains that no amount of massage will clear up the prostate while these bodies are present. Whereas, an antituberculous régime will usually, in the entire absence of urethral treat-

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ment, cause these lesions to disappear spontaneously after which the prostate usually responds to massage. Furthermore, as I have reported four cases of very active tuberculous lesions following prolonged courses of massage in such cases, there is an even more important reason why systematic massage should be withheld during the persistance of these lymphocystic urethral lesions.

In some of these nonresponding cases many very large prostatic openings are seen in the posterior urethra. Some of these are openings to old played out abscess cavities whose walls are so rigid they cannot collapse. These patients may be benefitted by the occasional drainage afforded by massage but they cannot be cured by the procedure. McCarthy has attributed the large, scarred prostatic openings to a played out tuberculosis. In such cases massage is decidedly contraindicated by the possibility of reactivating dormant tuberculous foci. As a matter of fact, it would really be wise to precede massage in all chronic prostatic conditions by a cystourethroscopic study and thus avoid such unfortunate experiences.

PROSTATITIS IN TUBERCULOUS PATIENTS

Landis has repeatedly insisted that a distinct hazard is entailed in the massaging of prostates in patients known to have tuberculosis elsewhere in the body. He has seen two cases of acute miliary tuberculosis follow such treatments. These, added to those mentioned in the preceding section of this paper, should certainly make one cautious where tuberculosis is known to exist.

Perhaps it is too sweeping to say that in tuberculous subjects prostates should never be massaged, but certainly there should be something more important than the presence of pus in the prostatic secretion to tempt one to do so. It is justifiable in such patients who present no evidences of prostatic tuberculosis to carry out very gentle prostatic strokings in the presence of chronic gonorrheal prostatitis or where definite systemic symptoms are proved to be due to the absorption of prostatic pus. Such manipulations should never be done for longer periods than necessary to accomplish the object sought. The presence of nongonorrheal pus in their prostatic secretions should be disregarded.

THE FIBROID AND HYPERTROPHIC PROSTATES

The former are small and very dense to palpation and are occasionally accompanied by referred pains in the penis, perineum, rectum or inguinal regions, which is not relieved by massage. The latter are recognized by their size and consistency and accompanying vesical symptoms. In them massage does neither good nor harm.

THE AIM OF MASSAGE

It should never be forgotten that prostatic massage is applied for the cure of disease; that the tissue directly attacked is the seat of disease; that no lesion in the body is best cured by roughness and that this organ offers no exception. Our aim is threefold and is only reached by gentleness. We desire to promote drainage in a poorly draining organ, to improve its circulation and to stimulate its musculature. Bruising cannot accomplish any of these and may do great injury .

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The Rôle of the Renal Nerves in the Process of Urinary Excretion

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The rôle of the renal nerves in the process of urinary secretion is far from clear. Although their vasomotor action is well defined, no special secretory nerves have been found. On the other hand Carrel in 1908-1910 showed that one of his experimental animals lived two years after the transplantation of both its kidneys. At autopsy it was seen that the kidneys remained entirely normal, although this transplantation demanded a complete section of the nerves, thereby interrupting the nervous connection. Unfortunately Carrel does not mention the functional changes following the operation; at that time such functional investigations were not the vogue.

In the American literature (1) much discussion of this question took place. Asher and Pearce several years ago believed that they had found secretory fibres in the pneumogastric nerve. Later, however, Pearce (2) doubted this conclusion, for he could not prove an increase in oxygen consumption, which is the only index of the augmented cellular activity. Marshall and Kolls (3) show that in the process of diuresis the section of the splanchnic nerve and the changes in the rate of the blood flow through the kidney vessels give the same result. Similar results are obtained by compression of renal arteries. The excretion of urine depends more on the quantity of the blood which passes through the renal vessels than on the height of the blood pressure in the kidney. As a consequence of cutting the splanchnic nerve, there is dilatation of the vessels with an increase in the quantity of the urine. These authorities also assert that there is a difference in the excretion of sulphates from other salts (chlorides). The excretion of the latter depends only on the quality and quantity of the blood which passes through the kidney. If the splanchnic nerve of one kidney is cut, that kidney will excrete more sodium chloride than the other. But the excretion of sulphates in both

kidneys is equal, because this depends on the activity of the kidney cells. In accordance with this fact the pressure on the renal artery causes diminution of the excretion of the chlorides, but does not change those of the sulphates.

O. Pico (4) discussing Marshall and Kolls's articles (3) reported his experiments. Pico found that the change in the function of the kidney occurring after the section of the renal nerve was mostly an increased excretion of chlorides. It follows even in the absence of polyuria.

Ambard and Papin (5) recently devoted to this problem a part of the articles in their new review, *Archives des maladies des reins et des organes génitourinaires.* In recent years Papin's procedure for relief of kidney pain was to sever the renal nerve in the hilus. He employed this operation only in cases of nephritis accompanied by pain, or in mild cases of hydronephrosis with pain, or in all general cases of nephralgia or kidney neuralgia of uncertain origin. He supposes that this operation is more rational than the radical operation of nephrectomy or the insufficient nephrotomy, decapsulation of the kidney or nephropexy (6). In six[1] such operations performed by Papin the results were successful in stopping pain. At the same time Ambard used these operations for observing the secretory changes in the operated kidneys. Ambard maintains that the phenomena following immediately after operation must be differentiated from those following later. The effect of postoperative infection must be borne in mind. There is no doubt that polyuria follows the section of renal nerves. It is confirmed also by the experiments of P. Jungman and E. Meyer. They performed the following experiment: cutting the splanchnic nerve of the left kidney and collecting the urine of both kidneys by means of a catheter at certain intervals. The results were as follows:

		Right Kidney				*Left Kidney*				*Urinary Bladder*			
		one half hour				*one half hour*							
		I	II	III	IV	I	II	III	IV	I	II	III	IV
Amount of urine		24c.c.	91c.c.	44	28	125c.c.	230	128	86	0	109c.c.	73c.c.	0
Urea	*per mille*	2.2	1.5	2	2.6	2.4	1.3	2.1	2.5	—	1.5	2	—
NaCl	*per mille*	1.7	1	2	2.2	2.3	1.3	2.2	2.6	—	1.3	1.7	—

Time	*Right Kidney* *Amount of urine*	*NaCl*	*Left Kidney* *Amount of urine*	*NaCl per mille*
4 hrs. 30 min. to 4 hrs. 45 min.	0.5 litre	trace	0.7 litre	0.6
			section of the splanchnic	
4 hrs. 45 min. to 5 hrs. 15 min.	0.9 litre	trace	2.2 litre	9.4
5 hrs. 15 min to 5 hrs. 30 min.	0.6 litre	trace	1.25 litre	1.17
5 hrs. 30 min. to 5 hrs. 45 min.	0.8 litre	trace	1.6 litre	1.17
5 hrs. 45 min to 6 hrs.	1.3 litre	trace	1.6 litre	trace
6 hrs. to 6 hrs. 30 min.	1.0 litre	trace	2.3 litre	trace
6 hrs. 30 min. to 7 hrs.	3.0 litre	2.9 per mille	1.5 litre	trace

The marked polyuria, as shown in this table, is for a very short time. It lasts only for several hours, then there is practically no difference between the diuresis of the healthy kidney and the one operated upon. This fact which was observed also by other experimenters is attributed by Ambard to the subsequent infection. Such polyuria will persist at all times, during which the kidney parenchyma is irritated by the infection. If no infection followed the operation, diuresis becomes normal very soon. As confirmation of this fact, the author reported the result of his experiment with a dog. Ambard cut the nerves of the left kidney, the urine was collected every fifteen minutes. The results were as follows:

Right Kidney *Amount of Urine*	*Urea*	*Left Kidney (the operated)* *Amount of Urine*	*Urea*
15 c. c.	26 per mille	10 c. c.	30 per mille
22 c. c.	19 per mille	20 c. c.	20 per mille
35 c. c.	16 per mille	31 c. c.	17 per mille
38 c. c.	15 per mille	32 c. c.	17 per mille
28 c. c.	17 per mille	24 c. c.	18 per mille
20 c. c.	22 per mille	17 c. c.	24 per mille

As is shown by this table there is no marked difference in diuresis of either kidney. The same result was found by the investigations of patients operated on by Papin. Ambard reported one case among others of section of the right renal nerves in a patient (May, 1921) who was catheterized four months after the operation and the urine was collected every thirty minutes.

The urine found in the bladder was without doubt excreted by the right kidney (having the same concentration of urea). It is evident that after the section of the nerves on one side, both kidneys for a period of four months performed their functions equally well. This result demands an explanation. How is it possible that the kidney not having any connection with the nerve system, nevertheless several hours after the operation is not different in any way from the excretory function of the nonoperated kidney? Ambard asserts that the kidney being without nerves excretes the urine in the same amount as it excretes in normal conditions; but if it is irritated (by sudden cooling of the body), then the kidney function becomes insufficient. The section of the nerves which passes to the kidney certainly produces changes in the kidney function, but these changes appear only in special conditions, and can be demonstrated only artificially.

If on account of the operation the central stimulus becomes broken there remains, however, the influence produced by the organ itself. In normal conditions the direct irritation of the kidney itself possibly has the predominant rôle; hence there is no disturbance of the excretion of urine. Ambard confirms the fact that after unilateral section of the renal nerves the excretory function of this organ remains without marked disturbances for four months.

Will the kidneys retain their function indefinitely after operation? Do they possess the peculiarity that with its nerves destroyed, it remains, nevertheless, anatomically and functionally normal? Only further investigations will give a definite answer.

[1] After completing this article I found in the *Archives Franco-Belges de chirurgie* (July, 1923) a new paper from Papin where he gives the number of such operations as twenty-seven for enervation of the kidney.

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Hypertrophy of the Prostate in the Hands of the General Practitioner*

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In order to obtain a clear understanding of the proper course to pursue, whether the treatment should be palliative or radical, it is well to review briefly the clinical picture of socalled hypertrophy of the prostate, which may be conveniently divided into three stages.

In the first stage, or premonitory period, the first symptom to be noticed is a slight difficulty in starting the flow of urine and a deficiency in the force of the urinary stream; there are also symptoms of irritation, such a frequency of urination, especially once or twice at night, or during the day after the ingestion of alcoholics, and nocturnal erections, occurring in spite of lessened sexual power. This stage need not necessarily progress to the second and third stages, but may rarely remain stationary for many years or even permanently.

The second stage, or insufficiency of the bladder, is characterized by a slow and gradual development of retention of urine, increased frequency of urination, a feeling of incomplete emptying of the bladder after urination and the presence of residual urine. This stage may also last an indefinite time, or it may advance to the third stage.

The third stage is the period of incontinence, in which the bladder becomes enormously distended, even up to the umbilicus, the desire to urinate recurs every five or ten minutes with the passage of only a few drops of urine, or incontinence results—complete retention with dribbling. As a result of the increasing back pressure on the ureters and kidneys, constitutional symptoms appear, especially in the old and feeble, such as anorexia, flatulence, constipation, dyspepsia, a brown and dry tongue, emaciation, slight evening rises of temperature and drowsiness—a true urosepsis, due to the absorption of toxic material from the urine and the retention of waste products owing to the insufficiency of the kidneys from back pressure.

To complete the picture, the complications are mentioned. Retention of urine occurs in nearly every case of prostatic hypertrophy and may be acute or chronic. The acute form is often due to chilling or wetting of the surface of the body and taking cold, the sudden congestion of the mucosa around the vesical orifice causing it to swell and occlude the opening entirely. Retention may also be due to spasmodic stricture which is a reflex from constipation or rectal scybala, or from acidity of the urine. Normal urination is generally partially restored by catheterization, but retention soon recurs and the patient enters the second stage. Chronic retention is due partly to the obstruction at the vesical outlet from the enlarged prostate and partly to atonicity of the bladder musculature. Cystitis is the most common complication, being favored by the residual urine and passive congestion; it often results from instrumentation or from the invasion of colon bacilli from the rectum. With suitable treatment it improves considerably, but it is rarely cleared up entirely. Vesical calculi are associated with cystitis, especially in untreated cases. Pyelitis and pyelonephritis cause urosepsis. Hematuria results from the varicosities of the venous plexus of the bladder from pressure. Epididymitis results from the frequent or constant use of the catheter.

At first, the prostatic condition is a purely local and mechanical disturbance of the bladder, but sooner or later the kidneys become damaged as a result of functioning against great pressure, with a consequent disturbance in the functions of all the vital organs. All the body tissues suffer from the toxemia produced by imperfect elimination. The kidneys are affected the most seriously, thereby reducing the reserve power required to overcome the effects of even the slightest operation. The cardiac muscular power is also reduced and the lungs become predisposed to infection. The prostatic always has a sword over his head hanging by a thread.

The periods of apparent remission are not due to actual improvement in the underlying pathology of obstructive nature, but are merely the result of lessened congestion or of the elimination of some irritant which produces the edema of and around the prostate. With the advance of age the hyperplasia of the prostate increases and consequently palliative measures should not be advocated for the purpose of delaying the operation, except possibly in the first stage. But even in this stage radical measures are indicated as soon as signs of progression become evident. Neither age or debility, of themselves, are essential contraindications to operation. However, patients seventy-five or eighty years old, had better be treated palliatively. Eventually, from the very nature of the disease, operation must be done. Death will result unless the urinary retention and infection of the urinary tract are relieved. Early operation is necessary to prevent infection of the kidneys and the deterioration of the patient's general condition. The prognosis of operation is much better if done upon a patient in good general health than when it is done several years later when he is worn out from suffering and handicapped by diseased kidneys. For hospital patients and those who are unwilling or unable to practise aseptic catheterization, an immediate operation is indicated. At the same time it should be remembered that catheterization does render a certain number of patients comfortable even in the presence of complete retention. An intelligent patient should have the situation explained to him and may be allowed to take his choice of palliative or operative treatment, but if the palliative treatment is chosen, the patient must be kept under supervision and if the catheter must be passed with increasing frequency, if the urethra becomes irritable and painful, and if the cystitis is no longer easily controlled by bladder irrigations, operation should be urged, as further delay of operation only imperils the patient's life

*Read at the Harlem Medical Association, December 5, 1923.

and lessens the chances of surgical procedures.

Since catheterism is bound to show ill effects in time, catheter life should be reserved for those cases in which there is some serious and permanent obstacle to operation, such as diabetes, advanced heart disease, arteriosclerosis, hemiplegia, carcinoma, or some other serious illness. Operative treatment or catheterism is indicated: 1. When the bladder has lost its power of complete emptying and the amount of residual urine measures three ounces or more; 2. when the patient's health is disturbed by the nocturia, which may occur even when the prostate feels small. If the residual urine amounts only to one half ounce, relief may be obtained by a carefully directed and hygienic life. Before advising treatment, we must determine whether or not serious damage has not already occurred. If the power of voluntary urination is lost, requiring frequent catheterization, or when catheterization is impossible or painful, permanent suprapubic drainage under local anesthesia is indicated.

Before advising a prostatectomy, we must bear in mind that the patient's reserve powers will be greatly taxed by the loss of blood, the absorption of necrotic material and a resulting strain upon the emunctories, and more or less sepsis. The reserve powers of the circulatory and excretory systems must be determined by ascertaining: 1. the reserve power of the heart, 2. the hemoglobin content of the blood, 3. the blood pressure, 4. the amount of urine passed in twenty-four hours and its specific gravity, and 5. the reserve power of the kidneys. If the hemoglobin content is lower than sixty per cent., prostatectomy is dangerous. Polyuria with a low specific gravity of the urine and a low urea content should arouse the suspicion of chronic interstitial nephritis. If the urea content of the urine is 1.5 per cent. the patient will probably withstand prostatectomy, and, other conditions being favorable, some patients will withstand prostatectomy even with one per cent. urea. The phenolsulphonephthalein test of renal function may also be used.

If these tests result unfavorably, the patient should be prepared so as to make him a suitable operative risk by relieving the pressure against which the kidneys must work, with the prostate left intact. This may be done either with an indwelling catheter, which should be tried first, or by suprapubic drainage. The latter is indicated: 1. if catheterization is impossible; 2. if the urethra is intolerable to an indwelling catheter; 3. if there is much urinary sepsis; and 4. if the period of drainage has to be prolonged. The latter period is usually ten to fourteen days, but it may be several months. If there is much residual urine or overflow incontinence, the evacuation of the bladder must be gradual so as to avoid uremia or hemorrhage from the bladder. This is done by catheterizing the patient every four hours, evacuating about twenty ounces each time until the bladder is emptied, when an indwelling catheter is maintained in the urethra, or the catheter, supplied with a plug, may be tied in the urethra and the plug removed every four hours. Uremia or bladder hemorrhage that follow a too rapid evacuation of the bladder may be relieved by filling up the bladder with a bland or mild antiseptic solution, like boric acid or normal saline solution.

If for any reason surgical measures are inapplicable, palliative measures may be tried. Hygienic measures must not be neglected in any case. In the prostatic, any excess reacts unfavorably on the pelvic organs by producing congestion, which must be avoided. Draughts and wet feet are dangerous. The clothing, especially the underwear and footgear must be suited to the weather. All excesses—physical, mental, sexual, dietetic or alcoholic—must be avoided. The diet should be light, bland and laxative, avoiding much meat. The emunctories should be kept active. The urine should be kept bland by the drinking of plenty of water. The bowels should be made to move at least once daily; straining at stool must be avoided. The urine should never be retained longer than three or four hours during the day. If nocturia is present, the urinal should be used in bed to prevent chilling of the body.

If the prostate is simply congested, the urine clear, the residual urine negligible and the bladder irritable with frequent and painful urination, urotropin (0.5-1.0 gm.) with acid sodium phosphate (1.0 gm.) and sedatives are useful; if urotropin is irritating it should be omitted. Bladder instillations of ten per cent. argyrol or one per cent. phenol solution are also useful. In retention without infection, the constant use of urotropin is indicated during the time of local treatment and if more than fifty c.c. of residuum is found, urotropin should be used constantly in small amounts. In the presence of infection, the treatment is that of prostatitis or retention cystitis and urotropin is given for short periods in doses as high as possible. The bowels and stomach require cathartics, enemata, gastric lavage, etc. Opiates must be given with extreme caution. For the frequency of urination, the passage of a large-sized, full curved steel sound is useful. The pelvic organs are decongested by enemata, repeated hot sitzbaths, hot rectal irrigations, prostatic massage and such drugs as urotropin with acid sodium phosphate, benzoate of soda, santal oil and the various balsams. Ergot combined with bromides is sometimes useful. Excessively acid urine is treated with a change of diet, especially a reduction of the amount of sugar and an increased intake of fluid; also the neutral or alkaline salts of sodium or potassium, or alkaline mineral waters.

In the first stage of the disease, bladder irritation must be treated with instillations of argyrol or carbolic acid, or by prostatic massage and the rectal douche. If acute retention occurs, a hot sitzbath and a hypodermic injection of morphine may be used temporarily, but catheterization becomes necessary, entailing, 1. absolute cleanliness by irrigation of the meatus before catheterization, and of the bladder afterwards and the administration of urotropin, and, 2. keeping the bladder empty. Urotropin should be administered after the catheterization and three times daily thereafter. The patient is immediately put to bed, under skilled nursing care, fluids are restricted, hot rectal irrigations are given and preparations are made for catheterization. If the patient urinates comfortably after one or two catheterizations, no further treatment is necessary. The best type of catheter to use is the relatively stiff, silk webbing catheter of the bougie or Mercier coudé type, size 18-22 F., which should be ster-

ilized by boiling and introduced carefully and gently. The urine is allowed to escape slowly and if no more than twenty ounces of urine are present, the bladder is emptied completely. With enormous distention of the bladder, only twenty ounces should be withdrawn at one time and the catheter should be left in place, properly stoppered, and the urine should be allowed to escape from the bladder at intervals of fifteen to twenty minutes until it is emptied. Then a bland solution, like boric acid or physiological saline solution, should be injected into the bladder and left there. If repeated catheterism is necessary, the same precautions must be repeated each time. As a rule, catheter treatment should be instituted as a last resort.

If retention continues, catheterization is absolutely necessary. Circumstances determine the means of keeping the patient's bladder empty. In hospital cases, a catheter is tied into the urethra, urotropin is given, the patient is kept in bed, a phenolsulphonephthalein and a blood chemistry test are made and infection is awaited. Within a few days there will be a rise of temperature, possibly chills, but if there is good drainage of the bladder and if irrigations with one in four thousand silver nitrate solution are instituted once daily, and if urotropin is continued, the reaction will subside in a few days. The phenolsulphonephthalein output will show fluctuations during the next week and finally become apparently stationary. If the polyuria has disappeared and the blood chemistry has become normal or nearly so and cystoscopy has been done, the patient is ready for operative measures, which are urged upon hospital cases. If the retained catheter does not produce the desired results, suprapubic drainage should be instituted.

In private practice, it is very much better to have a trained nurse pass the catheter as often as necessary than to maintain an indwelling catheter or suprapubic drainage. At first the catheter should be passed every time the patient has the least inclination to urinate and after a few days the frequency of urination becomes known and can be forestalled by catheterization. The patient is confined to his home and the bladder is irrigated twice daily, urotropin is given and the phenolsulphonephthalein test is made. If the bladder is emptied spontaneously, operation is not imperative but preferable, as sooner or later retention will recur. If retention continues, operation is urged as a less dangerous procedure than catheterism, provided the general condition is not such as to make the operative risk unusually great. A low phenolsulphonephthalein output is no contraindiction to operation, if other conditions are satisfactory and if the acute condition of renal reaction following the first catheterization has been passed. Chronically infected patients and those accustomed to moderate retention are good surgical risks; uninfected cases with acute retention are more likely to do badly if operated upon too hurriedly. The phenolsulphonephthalein output should be as high as possible before operation, but when this has become stationary, operation is justifiable.

Patients who refuse operation or who are unsuitable operative risks for any reason, may resort to catheterism. This should be preceded by cystoscopy to determine the conditions inside the bladder as to diverticulum and stone, and as to the size and shape of the prostate. The patient usually goes into chronic complete retention and the catheter must be passed often enough to forestall urination, usually four to six times in twenty-four hours. Asepsis and gentleness in the introduction of the catheter prolong life. The head of the penis and the hands of the patient should be kept thoroughly clean by washing. The patient is instructed to boil his catheter, anoint its end with a sterile lubricant, and, holding the catheter at a point at least two inches from its extremity, the lubricant is mopped on the end of the penis and the catheter is gently inserted into the urethra and bladder up to the point where the urine begins to flow; the bladder is emptied and the catheter is then withdrawn. The bladder is irrigated once daily with a one in four thousand solution of silver nitrate, using a douche bag raised to a level of three feet above the hips and filling the bladder with the solution two or three times up to the point of comfort. The necessity of the strictest possible asepsis must be vehemently urged upon the patient and unless the utmost gentleness is used, false passages will result to aggravate the condition.

Infection and the resulting cystitis, sooner or later are bound to follow retention. This may be combatted with medicinal treatment, such as the administration of urinary antiseptics, the formaldehyde preparations, salol, methylene blue, benzoate of soda and biborate of soda, singly or combined. If the urine is alkaline, sodium benzoate or boric acid is given three times daily, but the most effective are the formaldehyde preparations combined with acid sodium phosphate given three times daily. A good plan is to alternate one with the other at different periods. Overconcentrated and acid urines are treated with the citrate or acetate of potash, combined with alkaline mineral waters and a reduction of sugar in the diet.

Infection and cystitis combined with complete retention of urine exists either as a precedent of retention or occurs subsequently to retention as a result of instrumentation. In this condition the bladder is catheterized daily, carefully irrigated and injected with two ounces of a 0.5 per cent. silver nitrate solution, which is allowed to remain in the bladder for five to ten minutes and then withdrawn. Internal disinfectants are also indicated. Or protargol, argyrol, one to two per cent, mercurochrome, or one in three thousand acriflavin solution may be used singly or alternately at different times for irrigation of the bladder. This treatment should be continued until the cystitis is overcome so as to prevent infection of the upper urinary tract, which renders prognosis bad and operation is indicated.

With incomplete retention of urine, the amount of residual urine is insignificant in the early stages of prostatic hypertrophy, but it increases in time, necessitating either the habitual use of the catheter or prostatectomy. With infection and an active cystitis, treatment is necessary regardless of the amount of the residual urine and then the question of palliative or operative treatment must be decided. If palliative measures are decided upon, the pain and the undue frequency must be relieved, the treatment being guided by the following rules: Palliative

measures should be discontinued if, after a sufficient trial, they fail to abate the symptoms permanently. The first infection of the bladder alone is not sufficient reason for operation unless the palliative measures fail to subdue the resulting inflammatory condition. Recurrent infections of the bladder demand operative interference. The selection of the type of operation must be left to the surgeon.

Intermittent catheterism is indicated as a temporary measure to relieve temporary obstruction. Its dangers are those of septic infection, which may be reduced to a minimum with proper care, but they are always present as the necessary precautions are sooner or later disregarded. The number of patients in whom an immunity to such an infection develops are relatively rare and death is the ultimate outcome. Another danger is the immediate constitutional reaction following catheterization, which may be serious and even fatal. The third danger is an accentuation of the local irritation which it is intended to relieve. The permanent tying in place of a catheter in the bladder has been recommended, but individuals differ in their ability to tolerate the instrument in the urethra. It obviates the difficulties incident to the frequent introduction of a catheter, but it produces a moderate urethritis and epididymitis and it may cause reflex anuria. In these cases suprapubic drainage of the bladder is indicated.

Continuous catheterization, accomplished by the introduction of a soft rubber, woven, or Pezzer self-retaining catheter, may be used in certain cases of enlarged prostate with chronic retention, to keep the bladder empty and to avoid the frequent introduction of a catheter. It is indicated: 1. When the catheter is introduced with great difficulty; 2. when much bleeding follows the introduction of a catheter, usually after repeated attempts at unsuccessful catheterization; 3. when there is pain and hemorrhage from cystitis and purulent or ammoniacal urine after frequent passage of the catheter.

CONCLUSIONS

In conclusion it may be said that as a rule, the general practitioner must not hesitate to advise surgical intervention in cases of prostatic hypertrophy that he may see in the second and third stages of the disease and possibly also those in the first stage, provided the surgical risk is not too great. If radical intervention is refused or contraindicated, palliative treatment may be instituted according to the outlines mentioned. Prostatic hypertrophy is essentially a surgical problem.

As the general practitioner or family physician is usually the first to see the patient with hypertrophied prostate it devolves upon him to advise the proper course of therapeutic procedure. Owing to his intimate knowledge of the patient's physical condition, he is well fitted to judge the operability of any one particular patient, which is a most important factor in the success of surgery. Furthermore, the patient has great confidence in the family physician, who also holds an important position in the family council. He can, therefore, aid the surgeon not only by his advice, but also by the proper preparation of the patient, should surgery be indicated. By no means would I in any way want to be understood as belittling the results of surgery in hypertrophy of the prostate. On the contrary, it is the only method of obtaining ultimate relief in properly selected cases and at the proper time, and the physician who fails to recommend surgery in such cases may be guilty of malpractice. None of the tests for the determination of the operability of a case or the treatment that I have mentioned should be beyond the knowledge or ability of the family physician. He owes it to himself and to the patient to be proficient in all of them and by their proper application he can do much to relieve the patient and direct him toward recovery.

35 East Sixty-sixth Street.

Four Cases of Epithelioma of the Penis Treated by Radium*

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I present herewith for your consideration four cases of epithelioma of the penis. These patients were treated at the Memorial Hospital in the department of urology. I chose these particular cases because each represents a different method of attacking the problem of penis cancer.

Case I.—Extensive lesion, radical operation, recurrence, x ray treatment. The patient, W. W., in October, 1919, noticed a small sore at the meatus, which gradually increased in size until it obstructed the flow of urine. Finally the entire glans was involved. Amputation with groin dissection was performed in Bellevue Hospital on October 1, 1919. In December, 1919, the patient was referred to the Memorial Hospital with enlarged hard lymph nodes in each groin, and thickening beneath the operative scars.

Treatment: Five x ray exposures in 1920 at intervals of one month. In January, 1921, three similar treatments at one week intervals, as follows: six minutes, four milliamperes, four mm. aluminum filter, ten inch spark gap, ten inch focal distance.

Case II.—X ray to local lesion, local amputation. The patient, J. H., in November, 1920, noticed a small growth on the left side of the glans penis, which gradually increased in size while being treated with caustics. Examination at the Memorial Hospital on February 25, 1921, showed that on the dorsum of the penis, involving the under surface of the prepuce, was a papillary growth two cm. in diameter. It was sessile, and the base indurated. There was no inguinal adenopathy. On August 30, 1921, the

*Presented before the Section in Genitourinary Surgery, New York Academy of Medicine.

local growth had progressed in spite of x ray therapy, in addition seemingly malignant nodes had developed in either groin. On September 15, 1921, amputation was performed with dissection of groins, leaving 324 mc. hrs. of silver filtered radium in the left groin.

Case III.—Radium alone to local lesion. Patient T. H. stated that about thirty years ago a small sore appeared on the penis which persisted for three years, finally clearing up under local treatment. In October, 1920, a slight recurrence was noted which had been growing larger. A sharp burning pain was felt. Patient visited the Presbyterian Hospital where a biopsy was performed, and when the diagnosis was returned carcinoma, he was referred to the Memorial Hospital. On October 28, 1921, there was noted on the dorsum and left side of the penis a raised, pink lesion scabbed over in spots. It measured two by three cm. in size. There was no definite inguinal adenopathy. On November 1, 1921, a dental compound applicator was employed, giving a dose of sixty mc. hrs. to the sq. cm. with a filter of one half mm. of silver. On February 14, 1922, a small area, previously untreated, received a similar application. In addition the groins received one prophylactic x ray exposure.

Case IV.—Patient J. W. noticed a small sore on the penis in February, 1923. It had been increasing in size, but caused no pain or discomfort. He was referred from Bellevue Hospital to the Memorial Hospital after a diagnosis had been made. On August 8, 1923, the frenum seemed replaced by a papillary tumor measuring two by one cm. in size. Induration was marked. No inguinal adenopathy. Six bare tubes of radium emanation each of 0.21 mc. were imbedded into the tumor as superficially as possible.

This patient was shown not at all as a final result, but because he had been examined a few weeks previously when Dr. Parounegian presented him before the section in dermatology, when the radium reaction was at its height and his circumcision had not healed.

34 East Fortieth Street.

The Pseudouremias Compared with True Uremia*

Report of Four Cases with Necropsy

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In two previous articles on the subject of uremia (1), a separate study of the syndrome of nitrogen retention was reported. By tabulating and analyzing the manifestations exhibited by patients with known nitrogen retention, a symptom complex was worked out which bears a close resemblance to the syndrome shown by nephrectomized animals and cases of total ablation of renal function in man. The most important element in this symptom complex is the absence of certain phenomena which play a conspicuous part in the common descriptions of uremia. Convulsions were never observed except just before death. Delirium was infrequent. Transient paralyses did not occur. Visual disturbances, except those due to changes in the fundus oculi, were rare. The essential symptoms associated with the syndrome of nitrogen retention proved to be drowsiness, gradually merging into coma, vomiting, restlessness, headache, increased tendon reflexes, and muscular twitchings.

In this paper I shall endeavor to contrast the syndrome of nitrogen retention (true uremia) with the various other terminal states occurring in nephritis (the pseudouremias). It is not intended to give the impression that the pseudouremias are in themselves definite clinical entities; in fact, the pseudouremias, as here considered, constitute a heterogeneous group. They occur in nephritis but are not due to renal inadequacy *per se*. They are conditioned by extrarenal lesions, which may in turn be a result of the existing nephropathy.

Four case histories are here reviewed, with the necropsy findings in each. An instance of bichloride poisoning with total anuria was selected as an example of true uremia (loss of renal function). Contrasted with this case three examples of the pseudouremias are described. Because of the coexistence of nephritis and the symptoms commonly described as characteristic of uremia, the clinical diagnosis of uremia had been made in each of these individuals, in spite of the absence of nitrogen retention. However, in each instance, the necropsy revealed sufficient cerebral disease to account for the clinical evidences observed without invoking the diagnosis of uremia. This diagnosis had simply served to cloud the issue in these cases and to divert attention from the cerebrum.

Without attempting to be too inclusive, the following schedule is suggested as a working basis for a classification of the general group commonly bunched together under the heading of uremia.

CLASSIFICATION.

I. Uremia: the syndrome of nitrogen retention.
II. Pseudouremias: absence of nitrogen retention.
1. Cerebral group:

a. Focal edemas: characterized by convulsions, amaurosis, evanescent hemiplegias, astereognosis, paresthesias, etc., due to edema of cortical centres.

b. Vascular accidents: when associated with advanced nephritis, these are often overlooked, because a vague hemiplegia with coma can so readily be called uremia.

c. Cerebral arteriosclerosis: disturbed cerebral function according to location.

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2. Cardiovascular group:
   a. Manifestations due to hypertension.
   b. Manifestations due to myocardial insufficiency.
   c. Manifestations due to cerebral arteriosclerosis (*l. c*).
3. Pulmonary group.
4. Miscellaneous group, including syndromes due to gastrointestinal conditions, complicating infections, etc.

The diverse nature of the conditions enumerated in the classification given above shows how all inclusive the term uremia, as commonly used, may be. It forms a strong argument in favor of limiting the term uremia to the syndrome of nitrogen retention.

TRUE UREMIA.

CASE I.—True uremia; total loss of renal function due to anuria consequent upon bichloride poisoning.

The patient, A. C., female, married, twenty-five years old, born in the United States, entered the Long Island College Hospital on April 29, 1919, with a history of having swallowed three bichloride tablets on the previous evening. A physician had promptly administered an antidote, washed out the stomach, and sent her to the hospital. The patient's mother had died of Bright's disease, otherwise the family history was negative. She had had pneumonia, scarlet fever and measles as a child, and typhoid at the age of eight.

On admission the patient complained of nausea and headache. The temperature was 99.4° F.; pulse, 85; respiration, 22. Physical examination was negative. The systolic blood pressure was 105 mm., diastolic 75 mm. Except on May 5th, when a few c. c. of urine were obtained by catheter, the patient was totally anuric. This specimen was of a dirty brown color and contained an abundance of albumin.

The blood chemical findings are tabulated below:

Date	Urea Nitrogen	Uric Acid	Creatinin	Sugar
May 3, 1919	117.6	....	8.	142.9
May 4, 1919	86.8	....	10.2	....
May 5, 1919	140.	....	13.3	166.6
May 7, 1919	121.8	14.1	14.8	250.

Up to May 4th the only symptoms observed were headache, nausea, occasional vomiting and anuria. At this time the patient became drowsy and listless. The drowsiness gradually increased, merging into a semicomatose state on May 8th, the date of death. No convulsions, visual disturbances, delirium, paralyses, dyspnea, or edema were observed at any time during her illness. Necropsy revealed the following findings: The kidneys were swollen and soft, and showed marked areas of cloudy swelling with portions of true necrosis. Microscopically, the epithelium of the tubules was badly damaged. The tubules were distended and contained desquamated epithelium and casts. The glomeruli were normal, and the capsules of Bowman showed no changes.

This combination of extensive coagulation necrosis of the tubules with intact glomeruli is characteristic of the bichloride kidney, constituting a pure type of the nephrosis of Volhard and Fahr. The conditions in this case were similar to those of a scientific experiment. An individual, previously in good health, was suddenly deprived of all renal function, and she remained in that condition up to the time of her death. Her symptoms were few in number and unspectacular in nature. Headache, vomiting, drowsiness terminating in coma, anuria, rising blood pressure, and nitrogen retention were the only manifestations. No convulsions, visual disturbances, delirium, paralyses, dyspnea or edema were observed at any time.

PSEUDOUREMIA.

CASE II.—Pseudouremia, cerebral group, focal edema type; acute nephritis with convulsive and amaurotic phenomena.

The patient, A. K., male, single, forty-two years old, Lithuanian, entered the Kings County Hospital on January 21, 1922, in coma. The only history that could be obtained was that the patient had become violently intoxicated on New Year's Day and that he had been drinking heavily ever since. About January 12th he complained of loss of vision, and a few days later he began to have convulsions. At about the same time he complained of headache and had a spell of vomiting. On admission he was unconscious and was having severe convulsions. There were tetanic spasms of the entire musculature recurring at intervals of thirty minutes, alternating at times with clonic seizures. The convulsions were so severe as to shake the entire bed. The tongue was badly bitten, the mouth was full of blood and the lips were frothy, and several teeth had been loosened by the violence of the paroxysms. There were involuntary evacuations of urine and feces. The temperature was 101° F., pulse 144, respiration 52. The systolic blood pressure was 215 mm., diastolic 130.

The patient was a well developed, well nourished man. The eyes were closed and deviated to the right. The pupils were equal, regular, and of average size, but reacted feebly to light. The heart and lungs were negative. The ophthalmoscopic examination showed a slight fulness of the veins, indistinctness of the disc margins, and a small retinal hemorrhage in the right fundus. The urine had a specific gravity of 1,020, with a heavy trace of albumin, many red and white blood cells, and a few hyaline casts. The blood chemical examination (January 21st) gave the following readings: Urea N. 16.3 mg., creatinin 1.5 mg., and sugar 120 mg. to 100 c. c. of blood. A spinal tap performed soon after admission showed the fluid to be under increased pressure. Following the puncture, the convulsions ceased, the patient became quiet, and the pulse and respiration became slower and stronger. By January 23rd the patient had regained consciousness, but was still very weak. Soon afterward the pulse became progressively weaker and the breathing more labored. Death occurred on January 30th. The final clinical diagnosis was acute diffuse nephritis with uremia; bronchopneumonia.

Necropsy revealed the following findings: The brain was edematous. There was marked cloudiness of the piaarachnoid over the left temporal lobe and in the occipital region, particularly at the occipital pole, where marked congestion was present. The right kidney weighed 320 gm., the left 375 gm. The capsules stripped with great difficulty. Fetal lobulations were present. On section the cortical width was increased. The parenchyma had a mottled appearance. The glomeruli stood out rather prominently as injected points. The microscopic picture

was that of acute diffuse nephritis. The heart weighed 490 gm. The free edges of the mitral valve contained distinct nodular thickening. The upper lobe of the right lung was the seat of a confluent bronchopneumonia; the other lobes were congested and edematous.

It is upon such cases as this that Traube's theory, which ascribed uremia to edema of the brain, was built. Convulsions and amaurosis, particularly where the spinal fluid is under increased pressure and rachicentesis gives relief to these symptoms, are usually attributable to cerebral edema. This lesion is not believed to be a postmortem or an agonal change. Transient paralysis or anesthesia, aphasia, astereognosis, and cortical deafness should undoubtedly be included in the same category, the functional defect depending upon the cortical area involved in the focal edema.

SUMMARY.

This paper aims to contrast the syndrome of nitrogen retention (true uremia) with the various other terminal states occurring in nephritis (the pseudouremias). Four clinical cases, one of true uremia and three instances of the pseudouremias, are described with the necropsy findings in each.

A case of bichloride poisoning with total anuria was selected as an example of true uremia. The only manifestations observed in this patient were headache, vomiting, drowsiness terminating in coma, anuria, rising blood pressure, and nitrogen retention. Convulsions, visual disturbances, delirium, paralyses, dyspnea, and edema, symptoms which play so prominent a part in the common descriptions of uremia, were at no time observed. The kidneys at necropsy revealed a pure type of the nephrosis of Volhard and Fahr.

Three other case histories are reviewed, in each of which the patient was suffering from nephritis without nitrogen retention. All of these patients were in coma, and two exhibited convulsions and amaurosis. In one instance the convulsions ceased and the patient emerged from coma following rachicentesis. In all three cases the final clinical diagnosis of uremia had been made in spite of the absence of nitrogen retention. At necropsy cerebral edema was found in the two patients in whom convulsions and amaurosis had been observed. The clinical and postmortem findings in these two cases tallied with Traube's old description. The third patient disclosed a cerebral hemorrhage at necropsy.

The common description of uremia includes too many diverse conditions. It is felt that the term uremia should be limited to the syndrome of nitrogen retention. Certainly, the three clinical cases described as instances of the pseudouremias differ radically from the syndrome exhibited by the patient with bichloride poisoning.

An attempt to classify the pseudouremic states shows how heterogeneous this group really is. If the term uremia is used in such a general sense as to include all of these conditions, it must necessarily be correspondingly lacking in definite significance. This fact forms a strong argument in favor of limiting the term uremia to the syndrome of nitrogen retention.

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616 Carlton Avenue.

This study included two additional cases of pseudouremia of the cerebellar type which were omitted on account of lack of space. They will appear in the author's reprints.

Malignant Growths of Prostate and Bladder*

B. S. BARRINGER, M.D.,
New York

CARCINOMA OF PROSTATE

Case I.—The patient, Mr. L., first came to the Memorial Hospital in June, 1921, at the age of seventy-two, with a tumor of the bladder. Because of his age, it was thought inadvisable to operate, and he was treated with radium through the cystoscope. That was not successful, so he was operated upon and the entire right half of the bladder was found to be a papillomatous mass. At the base of this mass was a good deal of induration, and because of the extent of the growth it was thought that not much could be done for it. However, the papillomatous mass was taken off and in the indurated base 20 bare tubes=7.84 m. c.=1038 m. c. hours were implanted. On top of this screened radium 3 tubes=110 for 6 hours=660 m. c. hours was placed, to get the portions that might have been missed by the bare tubes. The patient's convalescence was rather stormy, but he left the hospital a month and a half after the operation. He has a fairly tortuous urethra which is very sensitive, but he does not get up at night to urinate. He was perfectly well about two and a half years after operation. The growth taken from the surface showed a papillary carcinoma of the bladder.

CARCINOMA OF NECK OF BLADDER

Case II.—The patient, Mrs. H., showed another way of treating carcinoma, that is, without operation. She came to the Memorial Hospital in March, 1922, with a red papillary growth growing from "one to five o'clock" on the bladder neck, very near the left ureter. On the surface was some slough. There was no induration per vaginum. On three different occasions, because of the inaccessibility of the growth, bare tubes alone were planted in the base of the growth. Dr. Ewing reported the specimen to be a papillary carcinoma. When cystoscoped about a

*Case reports presented at a meeting of the Genitourinary Section of the New York Academy of Medicine.

month ago, her bladder was clean and she had no symptoms. She has now gone free for twenty months. The x ray pictures presented show the progress of the destruction of the tumor. In the fourth month of 1922 she had four bare tubes of five m. c. buried in the tumor, and before that she had five bare tubes of five m. c. each in the tumor. In all she received three treatments to destroy the tumor. On account of the inaccessibility of the growth it would have been difficult to operate on the tumor alone.

SQUAMOUS CARCINOMA OF BLADDER WALL

CASE III.—This case is interesting in that it shows a different type of tumor. The patient, Mr. M., came to the Memorial Hospital in December, 1920, being then fifty years of age. He had suffered from burning and frequency for three months and later had hematuria. He was operated upon because the cystoscope showed a number of good sized tumors on the anterior bladder wall one being four by three cm. in extent, flat and infiltrated. Because of the bad type of the tumors he was given a very heavy dose of radium, twenty-one bare tubes, totalling about ten m. c., being implanted in the base of the tumors. In addition he had packed against the tumors three tubes of screened radium equalling 43 m. c. for ten hours, so that he had 430 m. c. on the surface.

The patient had a stormy convalescence and a good deal of trouble afterwards. Stones were formed on top of the slough, one a good sized stone which could not be crushed. He was operated upon again and a large stone was removed from his prostatic urethra. At that time no tumors were seen in the bladder. After this he healed up without further difficulty and now, two years and eleven months later, he is in good condition. According to Dr. Ewing's report the growth was squamous carcinoma, infiltrated. In an article from the Mayo Clinic it was stated that out of 133 bladder tumors six squamous tumors were found, three of which were operable. In the three operable cases, one patient was alive, five or six years after the operation was performed. Squamous carcinoma is one of the bad types of tumor.

SARCOMA OF BLADDER

CASE IV.—This is a case of sarcoma of the bladder, which is rather rare. The patient, a man, was fifty-four years of age when he came to the clinic on June 9, 1920. At that time he had had an enucleation of a gland at the right side of the trigon. This was done by Dr. Lewisohn of Mount Sinai Hospital, who did not know just what it was; he thought it was an aberrant gland of Albarran and kindly referred the man to the Memorial Hospital. The wound was opened and examination revealed a tumor on the right side of the trigon about two and a half centimetres square, sloughing and with some induration at the base. It seemed to be malignant, so a specimen was taken and radium was implanted. Dr. Ewing reported it to be a myosarcoma of low malignancy—not of the high malignancy rapid growth type usually found. After the operation, the patient's prostate began to enlarge, and on five different occasions he had radium needles inserted into the prostate through the perineum, in an effort to control the growth. On January 7, 1922, cystoscopy showed scar tissue and no tumor. His prostate is now flat and scarred, three and a half years since he was first operated upon. A sound has been passed occasionally, but the patient has had no radium treatment since 1921.

In these days when deep x ray therapy is being advocated in place of radium for the treatment of prostatic carcinoma, it is interesting to see that occasionally radium does accomplish something in such cases. Personally, I have seen x rays do little for prostatic carcinoma and I feel that radium does considerably more, though neither gives brilliant results.

CARCINOMA OF PROSTATE

CASE V.—In 1915, Dr. Downes performed a prostatectomy on Mr. P. at St. Luke's. The pathological examination of the prostate showed it to be carcinomatous. Soon after the operation the patient's prostatic urethra began to close down and he had trouble in urinating. He did not come to the Memorial Hospital until a year and two months after the prostatectomy.

The patient had in that time been treated with fulguration, without success. At first no instrument could be passed into the urethra; the prostate was small and rather soft and the true character of the carcinoma was not discovered until after the radium treatment, when the tissues were shrunken and one could feel the indurated carcinoma. The case was treated by simply keeping at it, a little at a time, not enough to upset the patient, and having intervals of two or three months between treatments. That seemed to be the best method of treating prostatic carcinoma. The method followed seemed to give the patient little discomfort. He has had no treatment for several years, and it is now six years since his appearance at the Memorial Hospital. He is working daily, and his health seems to be perfectly good. He has not had any radium treatment for two or three years. His prostate is a little scarred and irregular.

CARCINOMA OF BLADDER BASE

CASE VI.—The patient, Mr. H., aged forty-eight, was first seen on December 10, 1918. He had had a previous cystotomy and cauterization of the tumor at the base of the bladder, about six months earlier. At first an effort was made to treat him without operating. The pathological report of the Brooklyn Hospital where he had been treated was either papilloma or papillary carcinoma. Finally he was operated upon in September, 1919. A cystotomy was done, which revealed many irregular tumors of the bladder base, hard and indurated. None of them was large, but altogether there was an extensive infiltration of the bladder base. Bare tubes were then put into these tumors and filtered radium packed on the outside of the tumors. That was four years and eleven months ago. He recovered without much trouble, but has not been cystoscoped since. He is feeling well, and is working all the time. The case should be classed as an infiltrating carcinoma of the bladder base, which was well for nearly five years.

134 EAST SEVENTY-SIXTH STREET.

Pyelitis in Children

I. RUSSEL KUHN, M.D.,
South Fallsburg, N. Y.

Of the febrile diseases in children, possibly none is more often overlooked than pyelitis. Fever, in a general way, indicates the presence of an infection. Most of the fevers of short duration have an unknown etiology and origin and many of the terms applied to them, as grippe, rheumatoid fever, cold, intestinal disorders or teething are called cryptogenic fevers. Many of these socalled nonspecific fevers really are due to pyelitis. Its recognition is usually a simple matter, and yet the possibility of its occurrence is forgotten and the urine of an infant so infrequently examined. Unrecognized acute pyelitis in infancy may give rise to fever varying from a slight to a most extreme degree with severe constitutional disturbances.

It is well known that lower forms of animal life are usually eliminated by the kidney without damage to the pelvis. When because of diminished local resistance or increased bacterial virulence, the pelvis of the kidney becomes damaged, pyelitis follows. Of the various bacilli, it is the colon bacillus that is most frequently found. The bacterial invasion of the kidney may occur in various ways: the hematogenous method of invasion is by far the most common and next the urogenous. Otitis media and tonsillitis have often been followed by acute pyelitis. It occurs at times as a complication of influenza, typhoid fever, diphtheria and scarlet fever. At times, an ascending infection from the bladder occurring almost invariably in female infants is the cause. There is an interesting relationship between diarrhea and acute pyelitis which leads one to suspect that the intestine may be the source of infection.

The clinical picture often presents itself with a striking and abrupt onset. The child has a sudden chill and the temperature varies from a 101° to 105°. At times nervous symptoms are so marked that one is led to think of an acute cerebral disease. The child may be excessively drowsy with neck stiff and even head somewhat retracted. There may, on the other hand, be convulsions. Vomiting and diarrhea are frequently early symptoms. Less frequently, especially in older children, there is some tenderness over the abdomen, at times even simulating appendicitis. The physical examination of an infant suffering with pyelitis is often entirely negative except for a puzzling and prolonged temperature usually for several weeks which shows little signs of abating. There is nothing to call attention to any abnormality of the urine until it is examined microscopically. Urine which to the naked eye is apparently clear and which shows very little albumin will at times give severe symptoms. One should not be misled by the gross appearance of the urine, but a microscopical examination should be made routinely in every child, particularly where physical examination shows nothing to account for the presence of high fever. The urine is usually acid and under the microscope shows a number of pus cells grouped together. Baccilli can also be seen in the field.

Pyelitis secondary to otitis media and tonsillitis is well shown in the following cases:

Case I.—H. S., female, aged five, complained of earache. Physical examination on June 26th showed temperature of 104°, throat congested, right drum inflamed. Right membrane cleared up in a few days, but the child became drowsy and temperature did not drop. Examination of urine showed a moderate number of white blood cells and a faint trace of albumen. Macroscopically, the urine appeared apparently clear. Under appropriate treatment, the child made a complete recovery.

Some cases, however, do not respond to treatment, and in spite of everything exacerbations occur.

Case II.—H. S., female, aged five, first seen in September, 1922, became ill with chills, cough and temperature. Examination showed tonsils enlarged, rest of examination negative. She gave a history of having had pyelitis following measles two years ago. Examination of her urine showed a few white blood cells. Child felt well one week later, but urine still showed a few pus cells. A few months later, January, 1923, child complained of nausea and vomiting, temperature 102°. Uranalysis again showed many white blood cells. Child was ill for five weeks when urine again became clear. Since then the child has had repeated attacks, and in spite of medical treatment, including vaccines, her urine at times will show white blood cells which will give her systemic disturbances.

The prognosis of pyelitis is generally good. The treatment of pyelitis is to remove the pus by giving large quantities of water to flush the kidneys unless they themselves are involved as in nephritis. The importance of the alkalinization of the urine cannot be overestimated. The drug most generally used is potassium citrate and must be given in doses large enough to make the urine alkaline. Care, however, must be taken not to disturb digestion or set up diarrhea—a condition which happens when the potassium salt is given in too large or frequent doses. A good substitute, then, is sodium bicarbonate. At times, the alkalies fail, and it is then that hexamethyleneamine should be tried. Salol and methylene blue are also given at times. The reaction of the urine is a very important factor in the medical treatment. When, as occasion happens, the reaction of the urine is alkaline, ammonium benzoate or acid sodium phosphate should be given. Vaccine treatment of pyelitis is still on controversial grounds. It should be tried, however, in obstinate cases where remissions and exacerbations occur.

In conclusion, it may be said that pyelitis is a disease occurring almost exclusively in females and, though simple in diagnosis, is often overlooked. The most frequent form of invasion is the hematogenous and the source of infection is usually remote from the pelvis of the kidney as tonsil, ear, intestine. Recognized early, it responds, as a rule, very satisfactorily to medical treatment.

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OF
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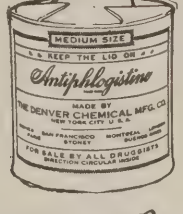

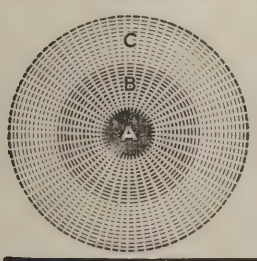

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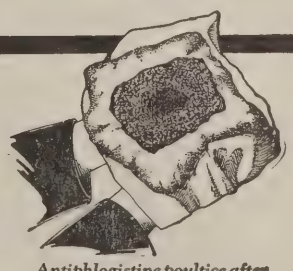

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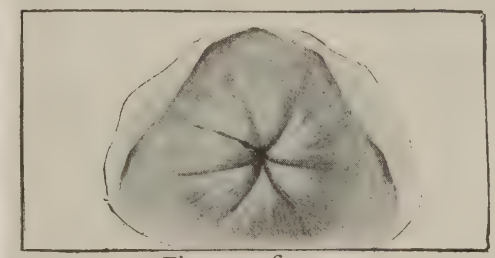
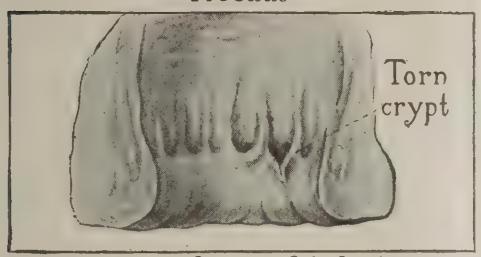
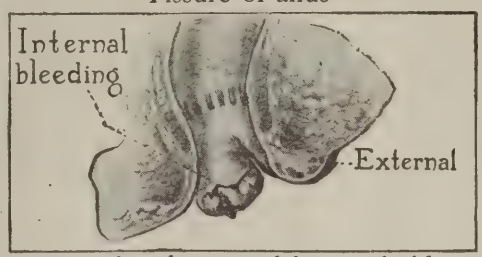


Fissure of anus



Cryptitis (focus of infection)



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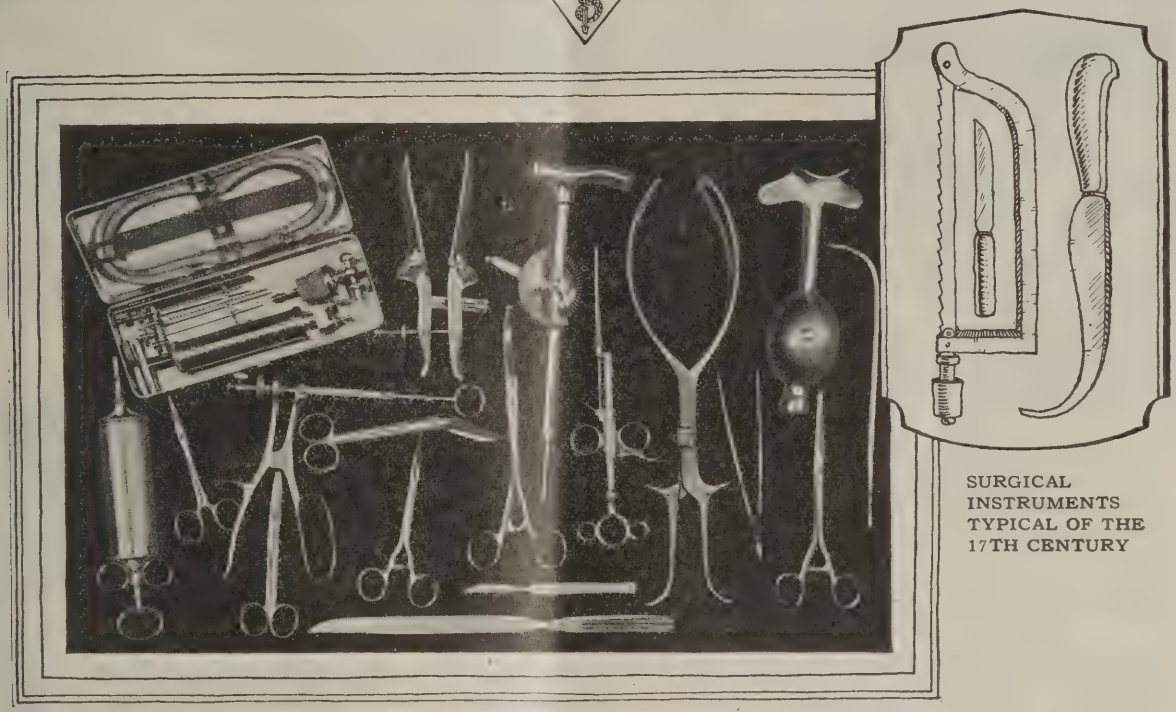

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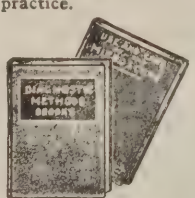

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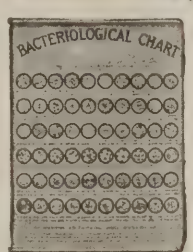

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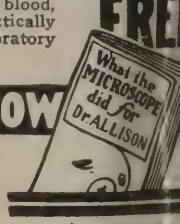

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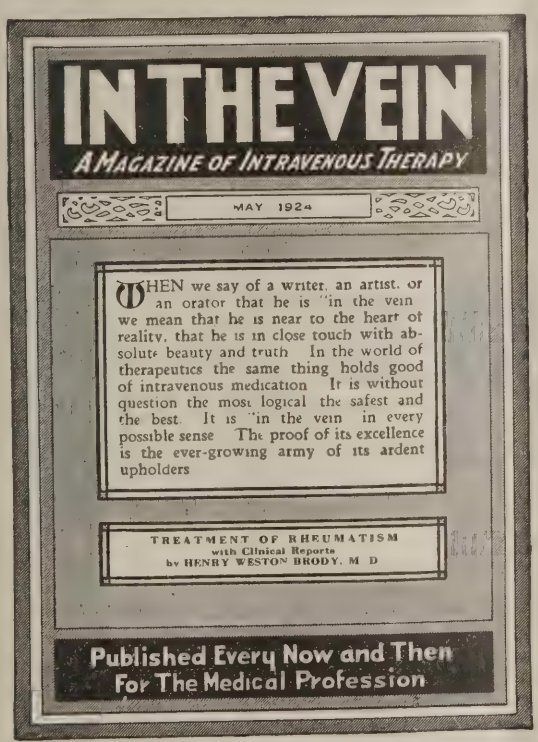
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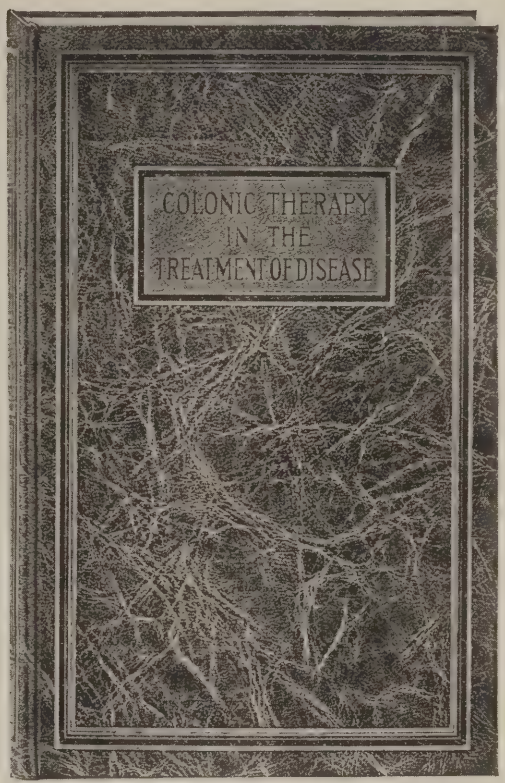

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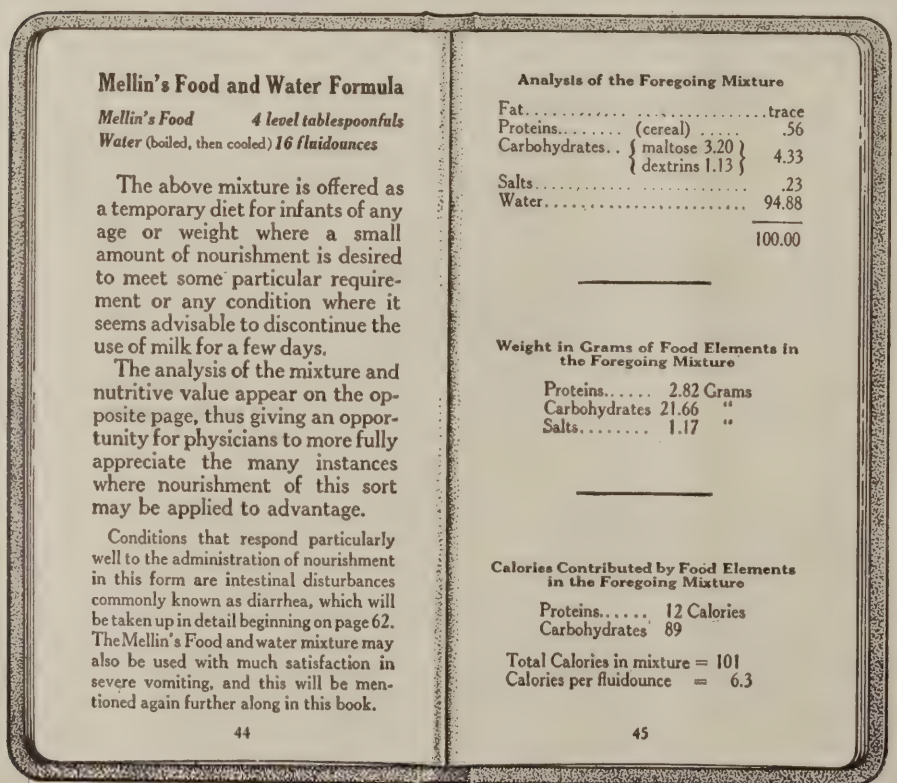

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Carbohydrates	maltose 3.20, dextrins 1.13	4.33
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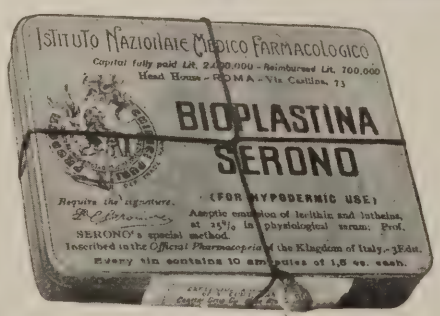

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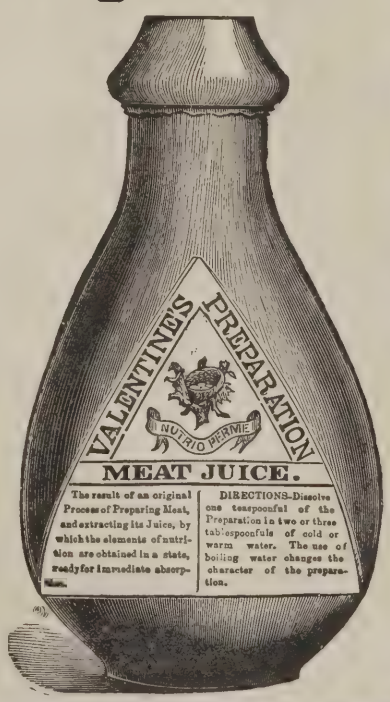
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Miscellany.

Antiquity of Dentistry.—The great antiquity of the science of dentistry is commented on in a recent number of the California *Dental Hygienist.* Herodotus wrote about the practice among the Egyptians. The Laws of the Twelve Tables, dating from the fifth century B. C., provided that when "teeth were bound with gold," it was lawful to burn or bury the gold with the body of a dead person. In Etruria not many years ago a human skull was exhumed which had a set of animal's teeth artificially inserted in it. Galen was the first physician to mention treatment of the teeth. Dentistry as a science, however, may be said to date from 1839, when Richard Newton described the organic relation of the vascular and soft parts of the frame and the hard parts of the teeth. The first dental school established in the United States was in Baltimore. It was founded in 1839.

Medical Magic.—Isador H. Coriat (*Annals of Medical History,* September, 1922) approaches the subject of medical magic from several viewpoints. He first reviews works that have played important parts in the history of this line of thought—Blueler's book on artistic thinking and Frazer's *Golden Bough.* Primitive man as a result of his limited experience knew principally contact and similarity and by these principles sought to control the mysterious powers of nature. Certain men of the tribe, more clever and perhaps more unscrupulous than the rest, sought to gain power over their fellows and thus acquired social and political leadership. At first they were the magicians, and later the medicine men, claiming control over the life principle, the cure of disease, and the avoidance or postponement of death. "In the animistic stage of human culture, man ascribed omnipotence to himself, this is magic; in the religious stage it was ceded to the gods, this is prayer; in the scientific stage man ceased to believe in his own omnipotence or that of anthropomorphic agencies, but ascribed it to the blind forces of the universe, this is energy."

The idea of a source of magic was wholly lacking in the undeveloped and primitive mind. Magic was essentially based on charms, either according to the law of similarity, which is called homeopathic magic, or the law of contact or contagion, which is called contagious magic. "The primitive magician or medicine man had a knowledge of magic only from what he felt were its practical results . . . and he never analyzed the mental processes on which the practice was based. . . . Consequently he remained in complete ignorance of the pathological processes of disease, and of the physiological or psychological readjustments, by which disease is ameliorated or cured." In modern medicine, the administration of certain ductless glands resembles the homeopathic medical magic of primitive man. Magic is a precursor of religion. The idea of a remote deity in very primitive societies had little effect on practical life, therefore man's gods devolved on his chiefs, magicians or medicine men, who became human interpreters of divine functions.

Dr. Coriat next outlines certain "cures" based on the theories of medical magic. The Hindoos recited a spell that banished jaundice to its yellow source, the sun. In Germany yellow turnips, gold coins and rings, saffron, etc., are considered remedies for jaundice. An ancient Indian cure for alopecia was for a doctor dressed in black who had eaten black food to pour before dawn the solution of certain plants, probably dark and hairy, on the patient's scalp. If you have pimples, watch for a falling star; while you are looking at it wipe off the pimples, which will fall to the ground with the star. Other strange cures are quoted for vomiting and tumors, the use of the placenta and the umbilical cord in magic, the treatment of wounds and dropsy, and the taboos of menstruation, childbirth, abortion and miscarriage, and the couvade.

All of medical magic is unconsciously governed by what men wish instead of by the actual facts of the disease. It is a sort of undisciplined or undirected primitive thinking, in contradistinction to modern scientific medicine, which is of the nature of directed or disciplined thinking. There still exist in all of us remnants of the beliefs and tendencies in magic, one of the best examples of which is the blind and uninquiring use of medical lore accumulated in past centuries, and based upon loose methods of thinking before clear scientific conceptions had been formulated. To advance, medicine must be satisfied with nothing but facts, with disciplined thinking.

Molecules Studied by Motion Pictures.—Movies to study the motions of molecules were described by Prof. Wesley G. France, of Ohio State University, in a paper delivered before the American Chemical Society at its recent meeting in Washington. The motion pictures were those of the "Brownian movements," or irregular jerkings of very small particles immersed in fluids. The movements are caused by the jolting of fast moving molecules against the floating particles, and although the molecules themselves cannot be seen, many things about them may be learned from a study of these Brownian movements. So Professor France took motion pictures of particles of basic carbonate of lead, about 1/25,000 of an inch in diameter, a powerful microscope being attached to the camera. The negatives thus obtained were then projected on a screen so that a total magnification of from 50,000 to 200,000 diameters was obtained. Measurements of the wiggling of the particles of lead carbonate were then made under varying conditions.

Pioneers of Public Health.—(*Nation's Health.* February, 1924.) The American Public Health Association originated at a meeting of nine men in April, 1872, in the office of the New York City Board of Health. They were enthusiastic over the possibilities of an organization working for the good of the people and met again on the evening of the same day in the old New York Hotel and discussed plans. Dr. Stephen Smith acted as chairman, and a general meeting for all interested in public health was planned for September. At this meeting a constitution was adopted, committees appointed, and an organization effected. Dr. Stephen Smith, first president, was influential in creating the Metropolitan Board of Health in 1866, he drafted the bill for the National Board of Health, and the law establishing the New York State Board of Health.

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Antiquity of Measles.—Undoubtedly measles is as old as the race, but it was first distinguished from smallpox in the tenth and eleventh centuries; we owe this differentiation to the observation of Arabian physicians. These observers recognized that having the measles did not give immunity to smallpox, and that having smallpox did not give immunity to measles. As a result of careful study of both diseases, they were able to point out the difference in the eruptions. Measles continued to be confounded with scarlet fever until the latter half of the seventeenth century, when the English of that time, Sydenham, pointed out the difference in the symptoms and in the eruptions.—Dr. V. C. Vaughan in *Hygeia.*

Changes in Corsets.—The change in fashion from the narrow waist is ascribed to Sarah Bernhardt who appeared as a boy in *L'Aiglon.* It is certain that the straight front corset appeared shortly after that time in 1900. The narrow waist persisted, however, until 1905, when it gradually gave way to the normal female figure with a Venus de Milo waist. From 1920 to 1922 it went still further until there was no waist at all and the desirable figure was the appearance of the immature girl of sixteen, theoretically cylindrical without a suggestion of roundness in contour. This boyish figure is a struggle to appear young and unspoiled. It is perhaps the least harmful of any of the corset fashions since the time of Cleopatra.—*Physical Exercise for Daily Use,* by Crampton.

The History of Pulse Timing, With Some Remarks on Sir John Floyer and His Physician's Pulse Watch.—Jacob Rosenbloom (*Annals of Medical History,* March, 1922). The pulse was probably first counted with the pocket water clock, used by Herophilus, the great physician of Alexandria. He called his instrument a clepsydra. Praxagoras of Cos, the teacher of Herophilus, was the first physician to use the pulse as an aid to diagnosis. In the works of Herophilus we find the pulse described with great detail.

Cardinal Krebs (1401-1464), the German theologian, has been declared the first man to suggest using the watch in timing the pulse, but Luciana, the Italian physiologist, claims that Cusanus in 1565 was the first to use a watch to record the rate of the pulse. William Harvey is credited with using the watch for counting the pulse rate. Galileo counted his own pulse in testing the pendulum's vibration. This led him to the idea of counting the pulse by means of a pendulum, using it somewhat as a metronome is used in keeping musical time. This apparatus was welcomed by physicians and was long used under the name of *pulsilogia.* Sanctorius (1561-1636), a professor of Padua, described a pulsilogium invented by him. Kepler in 1600 counted the pulse in timing astronomical phenomena. Théophile de Bordeu (1722-1776), founder of the Vitalistic School of Montpelier, developed a complete classification of the pulse, describing it as critical, compound critical, simple critical, noncritical, nasal, tracheal, gastric, renal, uterine, seminal, etc. The most important work of Sir John Floyer (1649-1743), one of the most original physicians of his time, was entitled The Physician's Pulse Watch. He was the first to make regular observations on the rate of the pulse, counting the number of beats in a minute by the watch. He describes the pulse of age, of youth, of pregnancy, exercise and sleep, and tells how diet, blisters and the weather affect it. The ordinary watch used in Floyer's time had a single hand, and recorded only the hours. His physician's pulse watch ran for one minute only. Floyer's method of using a watch for counting the pulse was taken up and continued by Louis, the famous French clinician, and, through the efforts and influence of the Dublin school came into common use in medical practice. Sir William Osler writes of Floyer's book: "The doctrine of the pulse reached such extraordinary development that the whole practice of the art centered around its different characters. There were scores of varieties, which in complication and detail, put to confusion the complicated system of the Graeco-Roman writers. The basic idea seems to have been that each part and organ had its own proper pulse, and, just as in a stringed instrument each chord had its own tone, so in the human body, if the pulses were in harmony, it meant health; if these were in discord, it meant disease. These Chinese views reached Europe in the seventeenth and eighteenth centuries, and there is a very elaborate description of them in Floyer's well known book. And the idea of harmony in the pulse is met with unto the eighteenth century."

Floyer's work on asthma gives the first account derived from dissection of emphysema, the observation having been made on a broken-winded mare. He distinguished it clearly from spasmodic asthma, from which he himself was a sufferer. He was interested also in the study of prophecy, and wrote the first book on the diseases of old age. He advocated cold baths, and had a cold bath built in the neighborhood of Litchfield. His book on the subject is entitled the History of Cold Bathing, Both Ancient and Modern.

The Demonstration of Urobilin in the Blood and in Body Fluids.—Oskar Weltmann and Wilfried Löwenstein (*Wiener Archiv für Medizin,* October, 1923) assert that the demonstration of urobilinogen in the serum is possible with the simplest methods much more frequently than would be expected from the reports in the literature. They found urobilinemia constant in croupous pneumonia, very frequently in severely decompensated valvular lesions with congestion of the lung and liver, relatively frequently in catarrhal icterus and almost always in cholelithiasis in the stage of urobilinuria. Under certain conditions the demonstration of urobilin in the serum has a diagnostic significance in pneumonia. Urobilinemia should not be considered prognostically unfavorable in pneumonia. In valvular lesions the demonstrability of urobilin in the blood runs parallel with the condition of severe decompensation. In diseases of the liver its clinical significance is at the present time problematical. The investigations on the urobilin contents of blisters showed positive results only when the urobilin was also demonstrable in the blood. A definite interpretation of the demonstrability of urobilin in the serum is not possible at the present time. It appears as if the relationship of the structure of albumin of the blood serum was the determining factor in the necessary conditions for the entrance of the urobilin into the blood.

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Reduction in the Use of Narcotics.—In a recent report, the director of the Narcotic Division of the Prohibition Unit, Department of Health of the City of New York, says that the importation, sale and use of narcotic drugs in the United States is decreasing. The importation of opium has decreased from 471,000 pounds annually for the ten year period prior to the effective date of the Harrison Narcotic law in 1915 to slightly less than 136,000 pounds in 1922, decreasing the per capita consumption thirty-six grains annually to approximately seven grains, or in morphine, the equivalent of seven eighths of one grain. For the six months ending December 31, 1923, the importation of opium particularly showed a decrease, while the sales of the various alkaloid derivatives of opium fell off fifty per cent. over the previous six months. Importation of coca leaves decreased from 626,341 pounds in 1920, to 342,260 pounds in 1923, a drop of approximately fifty per cent. in three years. The report adds: "The decrease in the importation, sale and use of narcotic drugs may be accounted for in part by the fact that non-habitforming synthetic compounds and preparations now on the market are replacing the habitforming narcotic drugs; to a more rigid enforcement of the narcotic laws and to the lack of new recruits to the great body of addicts."

Summary of Provisional Birth and Mortality Figures for 1923.—The Department of Commerce announces that birth rates for 1923 were lower than for 1922 in twenty-one of the twenty-seven states for which figures for the two years are shown in the following summary: The highest 1923 birth rate (34.8 in 1,000 population) is shown for cities of Wyoming and the lowest (15.6) is for rural districts of Montana. Death rates for 1923 were slightly higher than for 1922 in twenty-five of the thirty-six states shown for both years. Three states, Connecticut, New York, and North Carolina, have the same rates for 1923 as for 1922 and eight states, Colorado, Idaho, Montana, Nebraska, Oregon, South Carolina, Utah, and Washington, have lower rates in 1923. The highest 1923 death rate (20.3 in 1,000 population) is shown for cities of Mississippi and the lowest (6.5) for the rural districts of Idaho. Infant mortality rates for 1923 are generally higher than those for 1922, as seventeen of the twenty-seven states show higher rates in 1923. The highest 1923 infant mortality rate (117) appears for cities of South Carolina and the lowest (51) for the rural districts of Utah and the cities of Washington.

Scientists Detect Art Frauds.—Art collectors can now add another weapon to their armory against the unscrupulous art faker and seller of false or retouched old masters. Two French scientists have invented a method by which retouching may be detected through the use of different sorts of light thrown on the suspected painting. The use of these various colors throws the retouchings, scrapings, and false signatures into prominent relief. If the picture be illuminated by ultraviolet light some pigments, such as zinc white, become fluoroscent. A false Renoir was detected by a spectrographic analysis of a small quantity of pigment scraped from the picture. This was found to be cadmium yellow, while Renoir always used chrome yellow.

New Publications Received.

(We shall publish in future full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we shall review those in which we think our readers are likely to be interested.)

THE DREAM. By H. G. Wells. New York: The MacMillan Company, 1924. Pp. 318.

TOLD BY AN IDIOT. By Rose Macaulay. New York: Boni and Liveright, 1924. Pp. 340.

CHILDREN OF THE AGE. By Knut Hamsun. New York: Alfred A. Knopf, 1924. Pp. 288.

THE NEW CANDIDE. By John Cournos. New York: Boni and Liveright, 1924. Pp. 328.

CHRISTOPHER COLUMBUS. By Johannes V. Jensen. New York: Alfred A. Knopf, 1924. Pp. 253.

THE WHITE SHIP. Estonian Tales. By Aino Kalles. New York: Alfred A. Knopf, 1924. Pp. 256.

INSANITY AND THE CRIMINAL. By John C. Goodwin. New York: George H. Doran Company, 1924. Pp. 308.

AFRICAN CLEARINGS. By Jean Kenyon MacKenzie. Boston and New York: Houghton Mifflin and Company, 1924. Pp. 270.

TAKING THE LITERARY PULSE. Psychological Studies of Life and Letters. By Joseph Collins. New York: George H. Doran Company, 1924. Pp. 316.

MATERNITY NURSING IN A NUTSHELL. By Elizabeth H. Wickham, R.N. With 28 Illustrations. Philadelphia: F. A. Davis Company, 1924. Pp. 167.

TUBERCULOSIS, A PRIMER AND PHILOSOPHY FOR PATIENT AND PUBLIC. By McDugald McLean, M.D. New York: Journal of Outdoor Life, 1924. Pp. 162.

STUDY OF MASTURBATION AND ITS REPUTED SEQUELÆ. By John F. W. Meagher, M.D., F.A.C.P. New York: William Wood and Company. Pp. 63.

LES RÉGIMES FONDAMENTAUX. Par Paisseau, P. Carnot, A. Lemierre, A. Baudouin Rathery, J.-Ch. Roux, Marcel L'Abbé. Paris: J.-B. Baillière et Fils, 1924. Pp. 161.

ALLGEMEINE UND EXPERIMENTELLE PATHOLOGIE. Nach Vorlesungen für Studierende und Arzte. Von Dr. Hermann Pfeiffer. Mit 50 Abbildungen im Text und 8 teils mehrfarbigen Tafeln. Berlin und Wein: Urban und Schwarzenberg, 1924. Pp. 594.

CANCER OF THE BREAST. With Study of Two Hundred and Fifty Cases in Private Practice. By L. Duncan Kulkley, A.M., M.D. With Forty Illustrations. Philadelphia: F. A. Davis Company, 1924. Pp. 336.

TUBERCULOSIS OF THE LARYNX: TEN YEARS' EXPERIENCE IN A SANATORIUM. By Sir St. Clair Thomson, M.D. Privy Council, Medical Research Council. London: His Majesty's Stationery Office, 1924. Pp. 91.

MANUAL OF GYNECOLOGY AND PELVIC SURGERY. For Students and Practitioners. By Roland E. Skeel, M.D. Second Edition, with 281 Illustrations. Philadelphia: P. Blakiston's Son and Company, 1924. Pp. 674.

DIFFERENTIAL DIAGNOSIS. Volume II. Third Edition. Presented Through an Analysis of 317 Cases. By Richard C. Cabot, M.D. 254 Illustrations. Philadelphia and London: W. B. Saunders Company, 1924. Pp. 709.

THE OPERATING ROOM. Instructions for Nurses and Assistants. By the Staff of St. Mary's Hospital, Rochester, Minnesota. (The Mayo Clinic). With 144 Illustrations. Philadelphia and London: W. B. Saunders Company, 1924. Pp. 165.

PROBLEMS IN TUBERCULOSIS. Administration, Diagnosis, Employment, Settlement. By Sir James Kingston Fowler, K.C.V.O., C.M.G., M.A., D.Sc. (Hon.), F.R.C.P. Oxford Medical Publications. London: Henry Frowde and Hodder & Stoughton, 1923. Pp. 63.

RELATIVE POSITION OF REST OF THE EYES AND THE PROLONGED OCCLUSION TEST. By F. W. Marlow, M.D., M.R.C.S. Eng., F.A.C.S. Illustrated with Original Diagrams and Charts. Philadelphia: F. A. Davis Company, 1924. Pp. 96.

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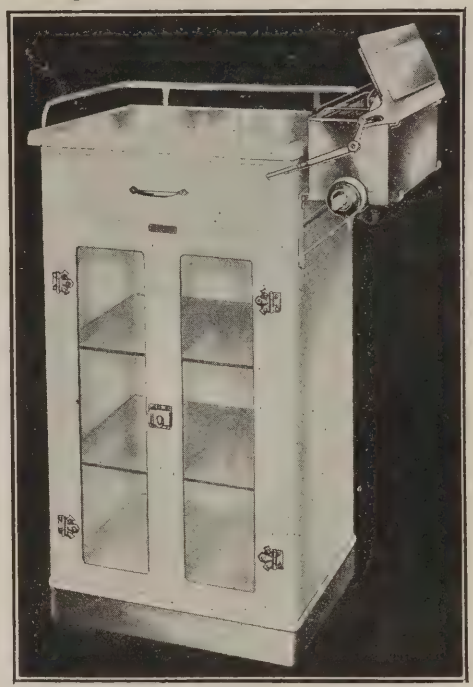

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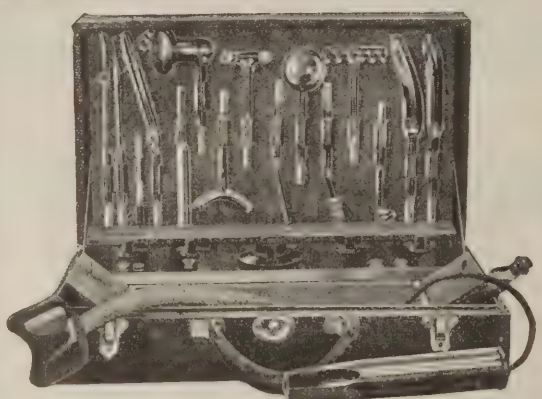

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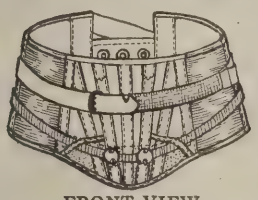

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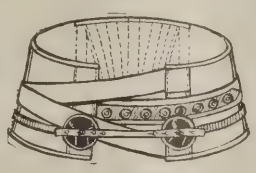

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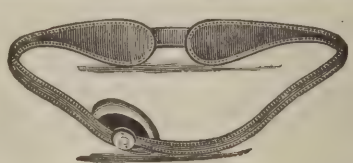

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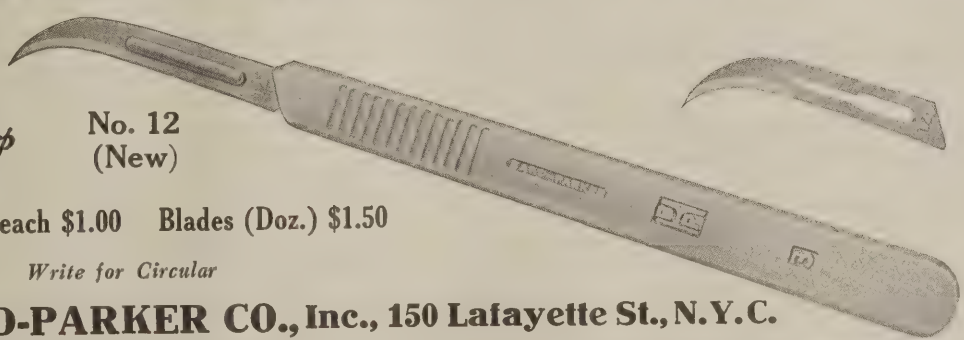

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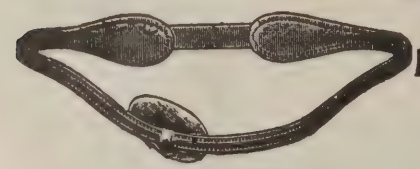

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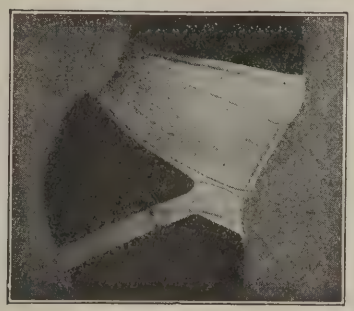

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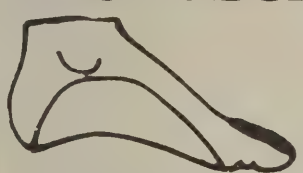

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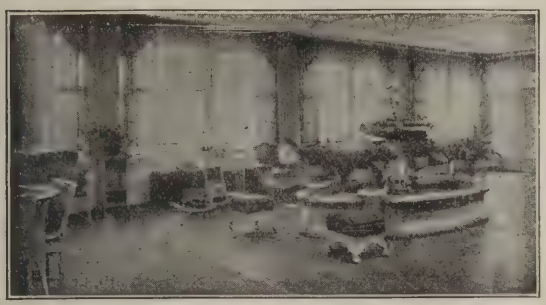

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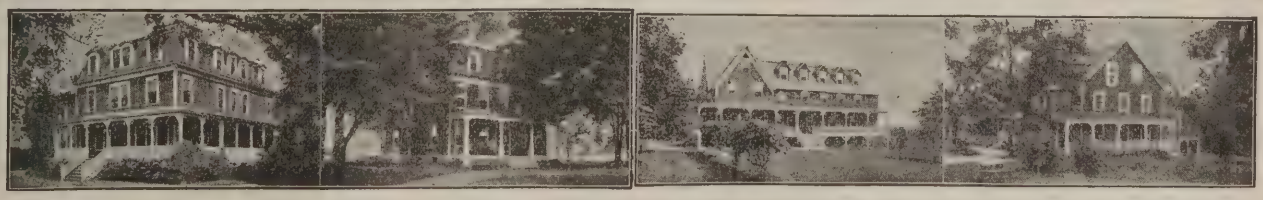

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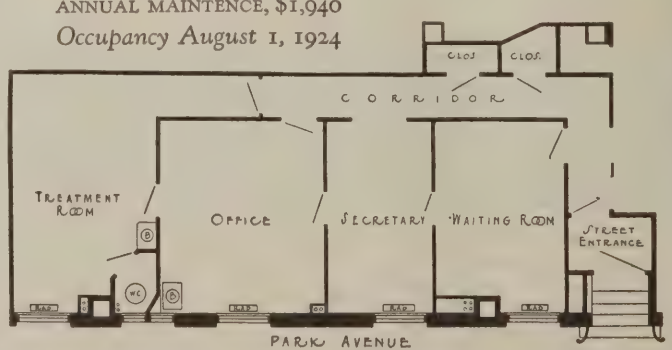

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